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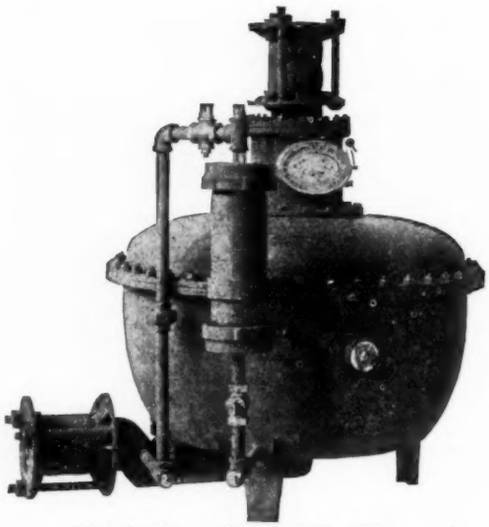

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Wood a Satisfactory Carbonizing Material and Can Be Made to Partly or Wholly Displace Coal in Gas Manufacture

But It Is Only an Expedient at the Best and Justifiable Only as a Last Resort—Iron Retorts Best Adapted for Purpose—Elaborate System of Lime Purification for Removing Carbonic Acid Gas a Necessity

By HENRY M. BALSAM
Pernambuco Tramways & Power Company, Ltd., Pernambuco, Brazil.

While gas managers everywhere are now having their little difficulties as a result of restricted coal supplies and increased fuel costs, those responsible for the performance of gas plants in South America are able to count more than one anxious moment in the life of their undertakings in the past two or three years. The cost of fuel is a factor of no little importance in modern gas works operation, but no situation can be more difficult or embarrassing than that created by a complete cessation of supply. I particularly remember the fact of our coal bunkers containing only three days' supply one day last year when a long-expected shipment of coal finally put in an appearance. The cost of coal and oil, both already well-nigh unobtainable, have advanced something like 400 per cent since 1914, not due so much to the actual cost of the fuel as to the exorbitant freight rates to which overseas shipping is nowadays subjected.

Under the circumstances the finding of a suitable substitute for gas coal became imperative, and one little wonders that the ingenuity of gas engineers in South America was severely taxed, all possible substitutes one after the other making their appearance in the retort house. Extensive experiments made with wood in the latter half of 1916 developed the fact that wood was a satisfactory carbonizing material, and could, because of its abundance and comparative cheapness, be made to partly or even wholly displace coal in gas manufacture.

Wood—Moisture Content

Wood, to be efficiently carbonized and without the usual inconveniences attending its carbonization, should first of all be properly seasoned. Complete seasoning is, however, impractical, and even partial seasoning could not be recommended, except for such plants as are fortunate enough to possess extensive storage facilities. In our case, local conditions made the practice of even partial seasoning impossible, the wood being often placed in the retort with a moisture content running as high as 40 per cent. This is a matter of much moment, as there exist at least three principal objections to the moisture content in wood intended for carbonizing purposes:

1. The extra tonnage in the form of moisture that must be hauled to the works in the first place.

2. The extra fuel required under the benches to vaporize the moisture content.

3. The extra condensing capacity required, because of the abnormally high temperature developed in the foul main; the moisture of the wood, which is primarily vaporized in the retort, is ultimately carried over into the foul main, there condensing and yielding its latent heat. A ton of wood containing 30 per cent of moisture will only contain 70 per cent of carbonizing material, which means that for each ton of material actually carbonized about 430 kilos of water must be vaporized.

The seasoning of wood, however, is not nearly so simple a matter as one may suppose, when you consider that wood normally contains from 35 to 40 per cent of moisture, and that thoroughly air-dried wood may still retail as much as 20 per cent after nine months of seasoning.

Carbonization of the Wood

During the experimental period the proportion of wood gas produced in the retort house averaged about 20 per cent, as against 80 per cent of coal gas manufactured, the production of the former at certain times exceeding 35 per cent. The carbonization was effected in benches set apart for the purpose, the gas mixing in the foul main. Our condensing capacity, which up to the time of these experiments was only just sufficient for our normal production, was now found to be sadly

lacking, owing to the excessive temperature developed in the operation. No less than 25 per cent of the wood gas is constituted of carbon dioxide that has a most deteriorating effect on the candle-power; a gas containing 25 per cent of CO_2 will have little or no candle-power. On the other hand, a plant originally designed to manufacture wood gas will of necessity include an elaborate system of lime purification for removing the carbonic acid gas.

I found that the various specimens of wood carbonized by us yielded between 7,000 and 9,000 cu. ft. of gas per ton of wet wood, or the approximate equivalent of 10,000 to 13,000 cu. ft. per ton of dry wood.

There are undoubtedly splendid specimens of wood here and elsewhere that would give excellent results by themselves. "Mangue" wood, which is not uncommon here in the north of Brazil, is exceedingly resinous, though most difficult of cutting, being heavy of trunk and irregular of form. There can be no choice, however, as to quality of timber here when cutting is to be done on a large scale, as the forests are heterogeneous and selection is most impractical. One must accept the run of forest as it comes, and content oneself with average results.

We found that full charges made up of bundles of wood about 5 ft. long and of a section closely approximating the retort section, could be thoroughly carbonized within a period of from three to four hours at about half the usual temperature. Too high a temperature and too long a charging period will result in a reduced retort capacity and very inferior grade of charcoal, mostly dust. The charcoal yield at best is hardly above 20 per cent. Every grade of wood will of necessity require its own special treatment, and the yield will run in accordance with its composition.

Iron retorts are better adapted to wood carbonization than clay retorts. The process does not allow of the formation of carbon on the surface of the retort as in the carbonization of coal, and the acids evolved play no little part in the destruction of the apparatus. To keep the retort coated with a sufficiently thick layer of protecting carbon, it is advisable to alternate with coal charges occasionally, and some plants have so adjusted their operations as to enable them to do this one day out of every week.

Wood Firing

Experiments were also made with wood firing, the furnace being modified for the purpose. Wood firing at best is not satisfactory; it lacks the regularity and certainty of coke firing and requires almost constant and undivided attention. Our small old-fashioned direct-fired furnaces in use at the time, which were designed to burn coke only, necessitated considerable modification to meet the requirements of a long-flamed fuel.

General Remarks

Wood carbonization is not without its many advantages; it has been practiced for many years in various parts of the world in localities where timber is plentiful, and coal gas, because of the distance from the coal supply, is entirely out of the question.

Even at this distance from the source of supply, I would not recommend wood gas as an economical substitute for coal gas, despite the prevailing abnormal conditions of the fuel market. At best it is only an expedient and a last resort, particularly so where coke always finds a ready and handsome market.

There are numerous substances here besides wood available for gas-making purposes—nuts, cottonseed, oily shale, etc. Can they be had in sufficient quantity to make up for coal and will it pay gas works to carbonize them? I think not.

Where coal can be had, even in reduced quantity, one should not hesitate to make water gas, if possible. As an expedient it is a good one, and the only substitute worth while.

American and German Finances

Pessimistic Americans who view with alarm our increasing national obligations may derive a great deal of comfort from a comparison of the financial condition of the United States contrasted with that of Germany.

The total resources of the United States are estimated at about $250,000,000,000; our annual earnings are estimated at about $50,000,000,000. Our national debt, including the third Liberty Loan, may be put around $12,000,000,000.

Before the war our Government was spending about $1,000,000,000 a year. When the war is ended, interest charges, less the interest collected from our loans to our allies, Government insurance expenses and other necessary expenditures growing out of the war may conservatively be estimated at something like $1,000,000,000. We are confronted, therefore, when peace comes, with raising only a couple of billions a year revenue, a slight task for a nation of such tremendous wealth, capacity and resources.

The resources of Germany before the war were estimated to be $80,000,000,000. The annual expenditures then of the Imperial Government were about $800,000,000. Her debt now is $30,000,000,000, and her resources and man power have been severely impaired. After the war she is confronted with additional expenditures growing out of the war totaling some $4,000,000,000.

The interest of her war debt, even if the debt grows no larger, will be about $1,500,000,000. Although she is niggardly in her pensions to private soldiers and their families, $1,000,000,000 a year would hardly suffice to pay even small pensions to her injured and the families of her soldiers who have been killed. Her war debt must be paid some time and a sinking fund of 5 per cent would add $1,500,000,000 to her annual taxation. Here is a total increase of $4,000,000,000 all due to the war.

Of course both the United States and Germany may greatly increase their debts, but the increases will not change the relative situations.

The German Government has drained the German people of their gold, even their jewels and heirlooms, and yet the Imperial Bank of Germany now has but little over $500,000,000 of gold in its vaults. The United States has made no special effort to obtain gold, has made no call upon the people for the precious metal, and yet to-day has in its Treasury vaults practically $2,500,000,000 of gold coins and bullion.

Water Gas Manufactured by Ordinary Method for Domestic Use Exceedingly Poor Gas for Balloon Use

Likewise Gas Especially Made for Balloon Use Would Give Very Poor Results for Purposes of Domestic Consumer—F. L. Weisser Describes Experiences of San Antonio Company in Making Gas for Balloon Purposes

At the beginning of the war with Germany, the United States had few facilities for training balloon men, and the Missouri Aeronautical Association stepped into the breach and started a balloon school for aeronauts.

The school was first operated at St. Louis, but last fall it was decided to move it to some Southern point so that training could proceed during the winter months.

Communications were opened with the gas companies in many Southern cities in order to find a place where gas suitable for balloon purposes could be obtained.

San Antonio was chosen for the winter training school, because climatic conditions are favorable and because machinery was available in which special gas suitable for balloon purposes could be manufactured in sufficient quantities without interfering with the supply for city purposes, declared F. L. Weisser, in a paper on balloon gas presented at the annual meeting of the Southwestern Electrical and Gas Association.

The fact is that water gas which is manufactured according to ordinary methods for domestic purposes is an exceedingly poor gas for ballooning. Also, that the balloon gas which is manufactured specially for this purpose would be an exceedingly poor gas when used for domestic purposes. The good qualities of the former are the opposite of the good qualities of the latter. The fuel value of city gas depends upon a uniform heating capacity commonly accepted as being about 580 B.t.u. per cubic foot. This is provided for in the case of carburetted water gas by the "cracking up" in the generating apparatus of a good grade of crude oil or a special grade of distillate into a series of hydrocarbon vapors, and then fixing the same so as to remain in a permanent gaseous state. On the other hand, the good qualities of balloon gas depend entirely upon its specific gravity, or, which amounts to practically the same thing, its lifting power. It is the purpose of this paper to discuss briefly the method employed in the manufacture of balloon gas with carburetted water gas apparatus, some of the characteristics of the same, and also wherein it differs from the city gas.

Making Balloon Gas in Water Gas Equipment

The carburetted water gas generating apparatus consists of three cylindrical shells placed vertically. These are, briefly, the generator, carburettor and superheater. The generator and carburettor are connected near the top and the carburettor and superheater near the bottom. The size of these connections depends upon the size of the gas machine, varying in size from about 12 in. in diameter for a 5-ft. machine to about 24 in. in diameter for an 11-ft. machine. The shells are provided with a special tile lining about 12 in. thick. The generator is supplied with grate bars, which are placed about 3 ft. from the bottom, and this is the portion of the apparatus in which the fuel is placed from which the blue gas, or "water gas," is made. The carburettor is filled with a good grade of firebrick from the arches at the bottom to within about 4 ft. from the top, commonly known as checker brick. This brick is placed on the edge and spaced about 2½ in., and in such a manner that the rows of each successive layer are at right angles to each other. The object in doing this is to provide for a large area of exposed heating surface. The superheater is also filled with checker brick in a manner similar to the one just mentioned.

The usual method of operation as applied to the manufacture of carburetted water gas consists in blowing the fuel in the generator until the entire fuel bed has attained a uniform state of incandescence. On account of the fact that the three shells are all connected, it follows that the hot and combustible gases which are generated in the fuel bed will pass through the carburettor and superheater. Additional air is admitted at the top of the carburettor, which causes these gases to be burned during its course of travel through these two shells, and the heat thus produced is utilized to heat the checker brick with which it comes in contact. The products of combustion are then passed through the stack valve at the top of the superheater and out through the stack. This portion of the performance is generally known as the "blow," and it requires from three to four minutes in order to attain the desired temperature. When the "blow" has been completed, the air supply is shut off and the stack valve is closed. Then steam is admitted into the generator, which is forced through the bed of incandescent fuel, consisting principally of carbons. Upon coming in contact with the hot carbon, the steam dissociates, forming hydrogen and oxygen. The oxygen, on account of its great affinity for carbon, unites with it and forms carbon dioxide and carbon monoxide. The carbon dioxide in passing upward through the fuel bed is partially reduced to carbon monoxide. The hydrogen comes off as free hydrogen, because there is no substance with which it can unite. This mixture of gases is known as blue gas or water gas, and it consists of hydrogen, carbon monoxide and

a small amount of carbon dioxide. As the blue gas is passing through the carburettor a certain amount of crude oil is injected into it, which cracks up when it comes in contact with the heater checker brick and forms a series of hydrocarbon vapors. These vapors will mix with the blue gas, and while passing through the checker brick of the superheater the same become fixed in such a manner as to remain in a permanent gaseous state. This portion of the performance is known as the "run," and it generally requires about six minutes.

Ordinarily the average sample of carburetted water gas is made up of 70 to 75 per cent of blue gas and of 25 to 30 per cent of hydrocarbons derived from the crude oil. The heating value is approximately 580 B.t.u. per cubic foot, and the specific gravity is about 0.65 (air = 1).

Operating Method Changed Entirely

In order to produce gas in apparatus of this kind which will be satisfactory for balloon purposes, the method of operating must be changed entirely. It can readily be seen that in order to reduce the specific gravity of the gas it becomes necessary to either eliminate or reduce to a minimum all those components which have the highest specific gravity. These are carbon dioxide, illuminants, methane, carbon monoxide and nitrogen. Furthermore, it becomes necessary to increase the proportion of the gas having the lowest specific gravity, which is the hydrogen. On account of the fact that the carbon dioxide and carbon monoxide are derived from the action of the steam upon the heated carbon, this at once suggests the elimination of steam during the gas-making process. It is also a well-known fact that the action of heat upon certain crude oils and distillates causes the same to "crack" up to form a series of hydrocarbon vapors. The composition of the hydrocarbons varies considerably; however, all of them are made up out of carbon and hydrogen. The temperature at which this reaction takes place ranges from about 1,200 deg. Fahr. to about 1,500 deg. A higher temperature causes the hydrocarbons to dissociate and to form free carbon and hydrogen. Consequently this condition suggests an increase in temperature in the gas machine, with the result that the proportion of free hydrogen will be increased.

Theories Not So Easily Applied

It must be observed, however, that these theories are not as easily applied to practical operation as it may seem, on account of certain limiting factors.

The temperature range within the gas machine is limited to about 1,650 to 1,700 deg. Fahr. for its lowest value, because below this temperature all hydrocarbon vapors will not dissociate, with the result that the finished gas will contain too high a percentage of illuminants and methane, which will affect the lifting power very materially. From a hydrogen producing standpoint, the higher the temperature the more favorable will be the conditions; however, the maximum temperature is limited by the fusion point of the checker brick. Consequently, in order to obtain the best results, the crude oil is introduced in the generator, because at this point a temperature of about 2,000 deg. Fahr. or even greater can be maintained without injury to the apparatus.

The method of operation is as follows: The gas machine is heated slowly until a temperature of about 1,700 to 1,750 deg. Fahr. is reached in the carburettor and superheater. It generally requires from six to eight hours until the temperature conditions become uniform and constant. It is very important not to attempt to force the temperature too rapidly, because this frequently results in the burning out of the generator grate bars, and it may cause serious damage to the lining in the generator and the checker brick in the carburettor. It has been found very desirable to admit a certain amount of steam underneath the grate bars of the generator during the blow, which has a tendency to chill the bottom of the fuel bed by which an overheating of the grate bars is avoided. As the steam is forced through the fuel bed during the blow, it results in the production of an additional amount of combustible gases, which are burned in the carburettor and superheater by introducing the proper amount of air in these two shells. Therefore, the effect of the steam which is injected underneath the grate bars during the blow is not only to keep the same cool, but in addition to this it has a tendency to produce more heat in the carburettor and superheater, and consequently a uniform temperature and constant condition are more readily attained

After Desired Temperature Is Reached Operating Schedule Is Determined by Chemical Analysis

After the desired temperature has been reached, the proper operating schedule is determined by chemical analysis. At the beginning of the gas-making period the conditions are such that the oil which is introduced in the top of the generator is almost completely dissociated while being forced through the hot fuel bed. But the temperature begins to drop immediately, due to the chilling effect of the oil. This means that the dissociation of the oil in the generator decreases as the gas-making period increases. It follows that along with the free carbon and hydrogen which are produced in the generator, an increasing proportion of illuminants and methane are produced which must be dissociated during their course of travel through the carburettor and superheater. These reactions will take place until the temperature throughout the entire gas machine has been lowered to such an extent as to allow an abnormal amount of illuminants and methane to escape without having been completely broken up. This is an indication that the gas-making period must stop, and it then becomes necessary to bring the machine up to the proper temperature before another run is put on.

Several Methods of Meeting Specifications

There are several methods by which balloon gas of a specified lifting power can be produced, provided the required lifting power does not exceed 45 to 47 lb. per 1,000 cu. ft. of gas.

The first method consists in carrying the highest temperature at which the gas machine can be safely operated, which is about 1,850 deg. Fahr. in the carburettor and superheater. At this temperature the oil is dissociated to a very great extent, and a gas with a lifting power of about 50 lb. per 1,000 cu. ft. is secured. During the last two minutes of each run the oil is cut off and steam is introduced, which is forced through the

fuel bed in a reverse direction to the travel of the gases from the oil, and every third run is made with steam alone, no oil being sprayed into the generator in order to hold temperature down. The result is that, in addition to the formation of free hydrogen derived from the dissociation of steam, a certain amount of carbon monoxide and carbon dioxide is generated, the presence of which has a tendency to lower the lifting power of the finished gas to the desired value. The amount of steam which may thus be introduced and the length of time during which the steam is allowed to enter is determined experimentally. This method is very flexible, and the gas machine can thus be operated at its maximum capacity. However, there is always more or less danger in running the temperature to too high a value, which frequently results in the melting of the checker brick in the carburettor or in the superheater. This is especially the case when the checker brick is partially stopped up, which causes the heat to become localized. On account of the high temperature which is carried throughout the entire gas machine, it is possible to divide the total oil used per run equally between the carburettor and the generator, spraying one-half of it into each respective shell. It is on this account that the capacity of the gas machine is very much increased.

A Second Method

The second method consists in carrying a lower temperature, something like 1,700 to 1,750 deg. Fahr. The fuel bed in the generator is carried low in order to attain an extremely high temperature on the surface with which the oil first comes in contact as it is sprayed in. In this case oil only is sprayed into the generator, except that whenever the temperature shows a tendency to increase, which occurs possibly every second or third run, then about one-third of the total oil used during the run is sprayed into the carburettor. The amount of steam used at the end of the run is less than the amount of steam used according to the first method, depending upon the desired lifting power of the gas. The principal object in using this method is to maintain such a degree of heat which will cause the desired reactions to take place without having to depend upon any secondary reactions by which an extremely light gas is brought down to the required specific gravity. If the amount of oil used per run is very carefully gauged, and the run is not allowed to continue for too long a period of time, it is possible to produce a mixture of gases the specific gravity of which is extremely low without even carrying an abnormally high temperature. It is necessary, however, in this case to use an electric pyrometer in order that the conditions may be kept uniform and that the temperature may be properly controlled.

Not only does the manufacture of balloon gas present an extremely interesting subject, but the behavior of the gas in general under certain atmospheric conditions is a very interesting study, especially as to the way it affects the behavior of a balloon when floating in the air. It has been demonstrated that a given volume of gas will expand 1/493 of its volume when the temperature increases 1 deg. Fahr., providing that the pressure remains constant; also if the temperature of the gas remains constant its volume will vary inversely as the absolute pressure. These characteristics are only approximately true, because if the given volume of a gas could be made to decrease 1/493 of its volume with every degree Fahrenheit drop in temperature at constant pressure a condition would be reached where the original volume became zero when a total temperature drop of 493 deg. Fahr. had been reached. Actually, this change cannot take place, because there is no known gaseous substance which would not become liquefied before this temperature had been reached. Theoretically, however, the temperature at which zero volume would occur is known as the absolute zero of temperature.

It has been demonstrated that the behavior of all gases will follow approximately these physical laws, especially those which are quite far removed from their point of liquefaction. The farther that any gas is removed from its point of liquefaction, the more closely will it conform to these physical laws; consequently, for all practical purposes, the same are generally accepted as being sufficiently accurate.

Laws of Gases with Which Balloon Pilot Must Contend

It is these laws of the expansion and contraction of gases that the balloon pilot must continually contend with. These are some of the conditions which will absolutely affect the behavior of his craft. As the balloon ascends, the atmospheric pressure becomes less, consequently the volume of gas within becomes greater, which will result in a net loss of gas provided the balloon was fully inflated at the start. Even though an actual loss of gas has occurred, it is possible that the balloon will lift the same number of pounds as before, on account of the fact that the density of the remaining gas is less, thereby its lifting power is increased. If, in addition to a decrease in atmospheric pressure, an increase in temperature occurs, it will cause the volume of the gas to become still greater, its density will become still less and its lifting power still greater. The result is that the balloon immediately assumes a bullish attitude, and it will rise to extremely high altitudes if its pilot decides to submit to "her" erratic tendencies. In a case of this kind there is but one way to overcome this effect, providing that temperature and pressure conditions remain the same, and that is to reduce the volume of gas a sufficient amount in order to again establish an equilibrium.

It was stated above that at a constant pressure the volume of a gas varies directly as the absolute temperature. Under certain atmospheric conditions the temperature may vary considerably at a fairly constant pressure. This may happen, for instance, when a balloon is exposed to the rays of the sun when floating above a strata of dense clouds, if the balloon descends and comes in contact with the clouds a very sudden drop in temperature will cause the gas to decrease in volume, its density will become greater, and consequently the lifting power will become less. The result is that the velocity of the balloon will be accelerated, according to the laws of a falling body, and unless its momentum is counterbalanced by throwing off ballast its velocity may very soon become too great for any comfortable mode of travel.

It is these constant changes which affect the behavior of the gas and which may at times completely change some of its characteristics that cause the loss of gas and prevent the balloon from floating in the air an indefinite period of time.

Retorting Under Pressure Promises a Means of Utilizing Lignite for Gas Making

Prof. F. Schoch Discusses Experimental Work Along These Lines Undertaken by Him at University of Texas

Simple trials made to "retort" lignite in the ordinary way in which bituminous coal is retorted have revealed that the gas obtained is of low calorific value (about 350 B.t.u. per cubic foot), that the oily distillate obtained is composed of the high boiling members of the paraffin series, that the tar is a relatively poor binder, and its amount is only great enough to "bind" the solid residue when the distillation is continued until the residue is absolutely "dry coke," declared Prof. E. P. Schoch, head of the division of chemistry at the University of Texas, in a paper presented at the annual meeting of the Southwestern Electrical and Gas Association. All of these products are of relatively low value when compared with the following:

(1) A fuel gas of high calorific value (500 to 750 B.t.u.).

(2) An oily distillate yielding much gasoline.

(3) A pitchy tar.

(4) A carbonaceous residue containing all hydrocarbons remaining after just enough pitch has been obtained to bind the latter into briquettes.

Ordinary Methods of Retorting Coal Altogether a Hit-and-Miss Proposition

The ordinary retorting of coal employs none of the well-established principles of modern chemical synthesis, and is altogether a hit-and-miss proposition. The coal is placed in the retort in relatively thick layers, which is heated up gradually from layer to layer. In general, the products of distillation formed by the outermost or first-heated layers pass through layers which are at temperatures somewhat lower than those in which the products are formed, and hence the products formed at low temperatures pass through layers which are so cool that no further reaction takes place between the gases and the solids through which they pass, while the products formed at high temperatures pass through layers of hot solids with which they undergo extensive further reaction. It happens that with the retorting of good bituminous coal nothing but desirable products are obtained under these "automatically" controlled conditions, and it happens that with the same automatic control lignite yields mainly undesirable products. The problem before us is to substitute deliberately—humanly—controlled conditions which will give us desirable products in the retorting of lignite.

A little consideration of the factors affecting the formation of hydrocarbons in the retorting of coal or lignite will reveal that pressure is one of the first factors to be considered and controlled. It is merely accidental that atmospheric pressure affects the retorting of bituminous coal in a beneficial manner. It is a well-known principle in chemistry that a greater pressure will favor the formation of compounds richer in carbon, because in this way the number of molecules—or the gaseous volume of the products—is smaller than it would be if the compounds were richer in hydrogen. Thus, in the extreme instance of the gas obtained by retorting lignite under atmospheric pressure, the gas contains much free hydrogen with relatively little methane, while the gas obtained under higher pressures contains less hydrogen and more methane, and it is evident from the following equation,

$$C + 2H_2 = CH_4,$$

that the same materials in the form on the left side of this equation occupy twice the space that they do in the form shown on the right (CH_4), because on the left there are two gaseous molecules ($2H_2$) while there is only one on the right. This explains why the retorting of lignite under about seven atmospheric pressure, 105 lb., gives a gas with a calorific value of 740 B.t.u.'s, while under one atmospheric pressure the gas obtained has a calorific value of only 350 B.t.u.'s.

Passage of Gaseous Products

Another factor that affects the formation of hydrocarbons in the retorting of coal or lignites is the relation between the time required for the reaction and the rate at which each portion of coal is heated in the retort; if the coal is heated slowly, then it will undergo one reaction at the low temperature, another reaction at the next higher temperature, etc.; but if the coal is heated very rapidly throughout—to any desired high temperature—it will undergo reaction or reactions which it could not undergo when heated slowly, because with rapid heating the coal contains many substances capable of reacting which, with slow heating, will have been removed before the desired high temperatures are reached.

A third factor that affects the formation of hydrocarbons in the retorting of coal is the passage of gaseous products through hot layers of coal of different composition from the layers in which they were formed. This factor operates to relatively slight extent in the ordinary retorting of coal, but it certainly serves to change the amount and nature of the products obtained during the time that any particular mass of coal is at high temperatures. It is now recognized by scientific workers in this field that this action ought to be brought into play much more extensively; for instance, by a long continued dropping back of condensed product upon the hot mass from which it was formed.

The systematic application of one or another of these influences should certainly enable us to change lignite deliberately by retorting it into desired products just as the "automatic" application of these influences brings about the desirable changes in the retorting of coal; but the difficulty in the way at present is our lack of definite knowledge concerning the effects of these various factors. Hence the first step in the solution of this problem consists in the determination of the effects due to these separate influences. We are in the midst of this work, and would have been ready to report definite results had we not become engaged on a problem for the Ordnance Department, which naturally took precedence over all other duties. However, the design and operation of our apparatus will serve to indicate the nature of the work, and hence I shall present a brief description of the apparatus here.

We secured an "autoclave" of 1 cu. ft. internal capacity, and capable of withstanding 1,000 lb. of internal pressure. This was supplied with a pressure gauge, a safety valve, and an effluent tube connecting with a tar trap, a condenser for the oils, and a pressure reduction valve to allow the gas to escape "non-explosively" into

a gasometer. It is also supplied with a tube connection for injecting hydrogen under any desired pressure.

Retorting Lignite Under Pressure

The powdered lignite is placed inside of a cylindrical vessel the internal open space of which is 4 in. in diameter and 16 in. long. This vessel is suspended with its upper edge 1 in. below the lid of the autoclave and fastened to the lid. There is an open space of 1 in. width all around this vessel between it and the inner walls of the autoclave, and a free space of 2 in. between them at the bottom. The lining of this central vessel is of burnt fireclay—in fact, the vessel is essentially a tube of burnt fireclay with a spiral groove on the inside of the wall, which groove extends from the top to the bottom—two turns to the linear inch of length. A No. 9 iron wire is placed in this groove and serves as the heating element. A current of 8 to 12 kilowatts serves to heat the lignite up to any desired temperature in a few minutes. The lignite is stirred by means of a stirrer of a rectangle 2 x 16 in. made of ½-in. iron rodding, one of the 16-in. sides having extensions which serve as the axis of the stirrer and the other 16-in. side passes around close to the walls of the vessel, and thus brings all portions of the lignite rapidly into direct contact with the source of heat. For temperature observations, pyrometer couples are inserted into the linings at the top and bottom of the vessel.

To make an experiment, the vessel is filled with approximately 8 lb. of dry, powdered lignite. In order to make all experiments with the same sample, we secured a large amount of one kind of lignite, ground and mixed it thoroughly so that it is fairly uniform in composition, and placed it in airtight cans. It is almost needless to say that we have analyzed it carefully.

After filling the central vessel and closing the autoclave gastight, we fill it with pure hydrogen gas to any desired pressure (ranging from 100 to 800 lb.), and then we start the stirer, and finally we return on the heating current (direct current, 50 to 100 volts, 50 to 100 amperes), the aim being to heat the gas as rapidly as possible (five minutes) to any desired temperature (300 to 1,000 deg. C.) with the *smallest* current that will accomplish the result. A great deal of the oil and tar is condensed on the cold walls of the autoclave, and the rest are condensed in the condenser and tar trap. The gas is allowed to escape (into a gasometer) at such a rate as is necessary to maintain the pressure in the autoclave constant. When no more gaseous products are formed, the current is turned off, the gas is allowed to discharge into the gasometer until the pressure has dropped to one atmosphere, and the remainder of the gaseous hydrocarbons is blown out of the autoclave with some more hydrogen (sometimes with carbon dioxide). The gas obtained is analyzed—but all the hydrogen is neglected—and the oil and tar are analyzed. Then another trial at a different temperature (or pressure) is made, and thus we intend to continue until we have a curve of effects of temperature extending from 300 to 1,000 deg. C. and of pressures from 100 to 800 lb.

The manipulation of lignite on commercial scales under pressure and at definite temperatures may appear to some as an impossible proposition, but it is not nearly as difficult as it appears; the Rittman process for the cracking of crude oil is similarly carried on and is a commercial success. Furthermore, it is quite likely that a process will be devised in which the material is worked *in stages*, and at the highest temperatures it may not be necessary to have the material under pressure—it may be merely necessary to allow the products formed to be condensed and to drop back on the hot solid until the vapors have changed so as not to be condensed at certain temperatures.

Indiana Commission Adopts Definite Policy as to Depreciation Funds

Declares It Finds Companies Have Paid Replacement Costs Out of Current Expenses Funds

The Public Service Commission of Indiana has just entered an order in the case of the Martinsville Telephone Company, which places a definite construction on the practice, which has been adopted by some Indiana utilities, of using depreciation funds for other purposes than that for which they were intended.

The order is precedential and will affect the depreciation accounts of practically every utility.

The commissioners say in reference to the order that they have grown tired of misconception of what apparently is the obscure intention of the depreciation fund clause in the Public Utilities Act of Indiana, and that the commission has adopted a definite policy with reference to such funds hereafter.

Asserts Consumer Has Been Called Upon to Pay Twice

The commission says that the new policy is designed particularly to prevent the payment of depreciation charges twice by the consumer. The body has found, it says, where with many Indiana utilities it has been the practice while setting aside book figures representing depreciation funds, actually to use the depreciation fund money for many purposes. The commission says it intends to stop this practice, as under such conditions money that should have been taken out of the depreciation fund for replacements has been taken out of current expenses, usually under the item of maintenance, and the commission contends that by such practice the consumer pays two times the depreciation charge. One of the paragraphs of the order follows:

It is ordered, that petitioner shall pay into a depreciation fund the moneys provided for depreciation, which fund shall be held separate and handled with proper accounting; that there shall be paid out of this fund all costs of meeting depreciation. Moneys accumulating in said fund should be invested, and if invested shall be invested in Government and other high-grade listed securities, which shall return to said fund not less than 4 per cent interest per annum; or petitioner may borrow from this fund, for a period of not to exceed one year, funds to cover not more than 75 per cent of the cost of new construction, extensions or additions to the property items properly chargeable to capital account, but in such event petitioner shall place in said fund its own note or bonds bearing interest at the rate of not less than 4 per cent per annum. Such moneys so borrowed by petitioner shall be repaid in full within one year.

PETITIONER HELD STRICTLY RESPONSIBLE

In handling such fund petitioner will be held strictly responsible for its safe investment, proper administration and accounting. Said accounting shall be double entry, with the asset account designated as "depreciation fund"; the liability account shall be designated as "depreciation reserve account."

The Martinsville company, whose method of handling depreciation funds is regarded as typical of many Indiana utilities, was found, according to the order, to have charged within the last fiscal year $8,471 to maintenance and repairs under the head of operating expenses. In an analysis of the item the commission's audit disclosed that there had been included therein $3,156 for depreciation.

"This practice," read the order, "is, of course, improper, and once the rate of depreciation is fixed by the commission, is illegal. All depreciation expenditures should be charged against the depreciation accounts and not otherwise."

Former fiscal years were found to have shown somewhat similar conditions.

How the Gas Companies Are Helping the Nation

Former Employee of Central Union Gas Company Killed in Action

EDWARD A. ANDERSON, of 243 Willis Avenue, New York City, who entered the employ of the Central Union Gas Company, of 529 Courtlandt Avenue, Aug. 12, 1907, made the supreme sacrifice on the field of honor in France June 24. He was with the gas company up to December, 1917, at which time he was called in the draft. He received his military training at Camp Upton, and was a member of Company D, 308th Infantry. He was twenty-six years old.

During the period of his employment with the gas company he acted as a meter reader and was classed as a fitter.

C. WILLING HARE, of Philadelphia, Pa., has been named by Secretary Baker as chairman of an advisory committee of civilian experts to co-operate with the War Department in speeding up the war. He will have offices in Washington. The work of the committee is to systematize methods and expedite action in the war program. Mr. Hare is manager of the new business department of the United Gas Improvement Company. Since war was declared he has been active in training camp work, and as chairman of a special committee visited various national army camps to get information for the Secretary of War. With him will go J. B. Myers, commercial agent of the United Gas Improvement Company, a member of the committee. The committee will keep in close touch with army affairs in this country and will follow up various matters which under existing conditions are sometimes delayed through the tremendous burden placed upon the War Department organization as a result of the army's very rapid expansion. This civilian committee will be closely associated with the Secretary of War and the commanding officers of the camps. Being composed of practical business men who have made striking records in developing commercial enterprises, the committee will be able to cut corners, avoid red tape and take the shortest and most direct route to the objects desired.

EDGAR N. WRIGHTINGTON, vice-president of the Boston Consolidated Gas Company, of Boston, Mass., has been appointed a member of the advisory committee of civilian experts to co-operate with the War Department in speeding up the war.

LESLIE E. CORN-GARRISON, former employee of the Empire refinery in Okmulgee, Okla., was killed in France June 12.

FRED FENDER, of the gas pressure department of the Empire Gas & Electric Company in Bartlesville, Okla., has joined the National Army at Fort Oglethorpe, Ga.

Commission Issues Order Retaining Inequitable Division of Natural Gas Supply

The Public Service Commission, Second District, passed upon the complaints against the Pavilion Natural Gas Company on July 8, and issued orders granting the requests of the representatives of Warsaw and Perry, N. Y., and going somewhat beyond their requests. The order divides all users of natural gas into two classes, domestic consumers and industrial consumers. Domestic consumers shall include users of natural gas for heating, lighting and cooking in private houses, boarding houses and apartment houses, and users of natural gas for lighting and cooking in hotels, restaurants, bakeries, eating houses, club houses, hospitals and charitable institutions. Industrial consumers to include all other consumers of natural gas.

From Dec. 1 to March 31, no natural gas shall be furnished by the Pavilion Natural Gas Company to any industrial consumers for any purpose without special permission of the commission.

From Dec. 1 to March 31, no domestic consumer shall be permitted to use more than 25,000 cu. ft. of natural gas in any month of thirty successive days, nor more than a corresponding part of 25,000 cu. ft. for a proportionate part of thirty days, and no domestic consumer shall be permitted to use gas in a furnace not originally constructed for the use of gas, and the company is directed to discontinue all service to consumers who neglect or refuse to obey this order.

The opinion accompanying the order calls attention to the fact that no matter what provision may be made to secure an equitable distribution of the available supply of natural gas, the supply itself has been reduced to such a point that it is bound to be unreliable in the future. In Avon, 12 per cent of the consumers used 44 per cent of the gas; in Warsaw, 2 per cent of the consumers used nearly 12 per cent of the gas; in Perry, 5 per cent of the consumers used 26 per cent of the gas; in Mount Morris less than 10 per cent of the consumers used 50 per cent of the gas, and so it went. The order will stop such unfair absorption of the supply by a few people.

Making the New Consumer Feel His Importance

A Good Start Is Half the Battle—Simple Note of Recognition and Welcome Will Implant a Feeling of Friendliness to the Gas Company That Will Require Many Blunders and Shortcomings to Lose

By WALTER A. FAIRSERVIS
Kings County Lighting Company

The personal element of a utilities company is perhaps its biggest asset, and yet is one that frequently is either entirely overlooked or is approached in a spirit of half-hearted effort, which is worse than not touching it at all.

The old-time idea that the public would consume a certain amount of the product under any condition is being supplanted by the new idea that merchandising gas is not the only business of a gas company, but that giving real service is also a big factor in the welfare of the company.

First Impression Consumer Gets Is from New Business Department

Take, for instance, a new business department. The underlying thought of this department now seems to be universally that it should not be a drag, but in place should be a source of profit. There are two kinds of profit from the new business department that can be turned to good account by other gas companies. The first is, of course, that the sale of appliances should not be at a loss, but should rather make an adequate return to the company. The second is that practically the first impression that a new consumer gets is from the representative of the new business department. Perhaps it is a new iron that is needed or a range to replace the old one. At any rate, a start in the new home brings up some need of appliances. On the handling of this business depends to a very large extent the impression that a consumer will form, first, as to the courtesy of the company; second, as to its reliability, and third, as to its general policy of handling all business.

It is this opportunity that we all should seek. Prove that the consumer has a just basis to work on, and that the company will in all respects be absolutely fair in the handling of all matters, and you have won the first step in the battle to convince the consumer that every dealing will be just and fair.

A Policy That Has Been Proved of Real Value

A policy that has been proved to be of real value is the small courtesy of the forwarding of a word of welcome to each new consumer. A printed card is delivered with the first bill. This card reads:

> We are pleased to have you as a customer of this company. We shall endeavor at all times to maintain a standard of efficient service to you.
>
> When there are any matters you wish to bring to our attention, we shall be pleased to co-operate with you at all times.
>
> Cordially yours,

This card has a value that is far-reaching. It means that the presence of the consumer is really of sufficient importance to the company to receive attention. On that basis it flatters the consumer. Also, it convinces the customer that the company is striving constantly to give real service. These are little things in the course of the day's business, but it is the little things that will create the impression that the company is at their service at all times.

Putting "Pep" into Salesmen

The salesmen who have been developed into the best employees from the standpoint of service rendered by the gas companies are those who are not the highest class men as salesmen that can be found, but are men that are taken from what we may term medium circumstances, declared H. E. Danner in the course of discussion at the annual meeting of the Southwestern Electrical and Gas Association. I am not strictly in accord with all of Henry Ford's policies, but I do believe that in selecting a man for the commercial work of a gas company we should look into that man's home life.

We can judge a man's character, and a man's character stands out above all else in promoting good for the company that he is connected with. My experience has been in developing a man to where he will derive the best results is to use that man in a way so that he will derive from you the individual good which you have learned in your course of study and learning. We have what you may call classes or schools where we take certain branches of the work up at that time. I think that it is very important that the commercial men should know something about the entire working of the whole organization.

You can't take a man as a salesman or a representative of the gas company and put him out and expect him to get the results which you desire, from the standpoint of salesmanship alone; he must have considerable of the human element in him, and he must know his business, so as a consequence I have found that in getting the best results from these men, and in making better salesmen and better representatives out of them, is for them to learn all

they can about the business and keep ever before them the object of advancement. I have seen men and I have tried men who, when I have first taken them into the organization, it didn't seem as though they would ever amount to anything, and yet I had the pleasure not such a long time since of welcoming a man whom I started in the business, and he has a very responsible position in Missouri, and he is making good; that man was an average man, but when I took him into the organization I studied him, I learned his habits; he was thrifty and industrious, and those things are things that are necessary to build a man up to proficiency.

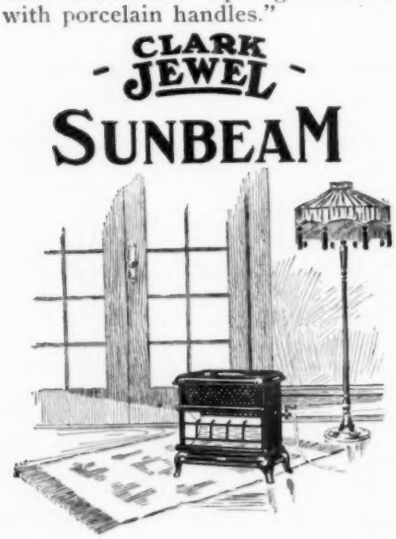
George M. Clark & Company Gives Attractive Publicity to Sunbeam Heaters

If looks as indicated by attractively gotten up printed matter have any influence, the George M. Clark & Company Sunbeam gas heaters will have a strong appeal to householders. The points featured are:

"The smooth copper back and sides, which reflect heat and light outward from the front. The perforated top section of body, which gives very fine circulation and distribution of heat, makes an ideal 'space' heater.

"Interior above the copper reflector is lined with aluminized steel, which will not tarnish from the heat. These linings are perforated the same as the body. They lighten up the interior and give a bright effect through the outer perforations.

"These heaters have burners with aluminum tips—gas cocks with porcelain handles."



Explosion Causes Damage to Utica Plant

An explosion of a blast pipe at the gas plant of the Utica (N. Y.) Gas & Electric Company early on the morning of July 20 wrecked one of the blowers and some of the blast pipe. The plant was able to continue work that day, but experienced a somewhat reduced supply.

A water stream with a chemical line quickly controlled the blaze, aided by the men of the plant with their fire-fighting apparatus.

There has been no determination of how the explosion occurred or what caused it except that there is no question that it was due entirely to accident.

Revaluation of Minneapolis Plant to Be Considered

Negotiations to establish the new gas rate to consumers in Minneapolis, Minn., will be begun by the city council early in August.

Under instructions from the council, C. D. Gould, city attorney, addressed a letter to Milo R. Maltbie, public utility valuation expert, now with the Federal Ordnance Department, asking him to come to Minneapolis to confer with the special gas committee of the council regarding revaluation of the plant of the Minneapolis Gas Light Company.

Mr. Maltbie's services are sought in an advisory capacity. It is not yet determined that he will revalue the property of the gas company, although the council committee is known to be seriously considering retaining an expert to advise it while the new contractual ordinance is in process of preparation.

May Seek Women as Meter Readers in Madison

That women may soon be employed as meter readers by the Madison (Wis.) Gas & Electric Company is the belief of Chief Meter Reader William Matzdorf. The Superior Water, Light & Power Company, of Superior, has hired one woman, who is working on its crew of about half a dozen readers.

The Madison company had seven men reading meters under the supervision of Chief Reader Matzdorf, two of which have been pressed into service and two are subject to the draft.

Mr. Matzdorf feels that when those subject to the draft leave, he may find it necessary to call for women help.

Co-eds from the university were looking for work in June. The entire office force on the second floor of the company's offices at Webster and Main Streets is composed of women.

Five men who recently left the office for service were Fred Richter, Reed Berg, Alfred Koss, Arthur Arbult and Stanley Nielson.

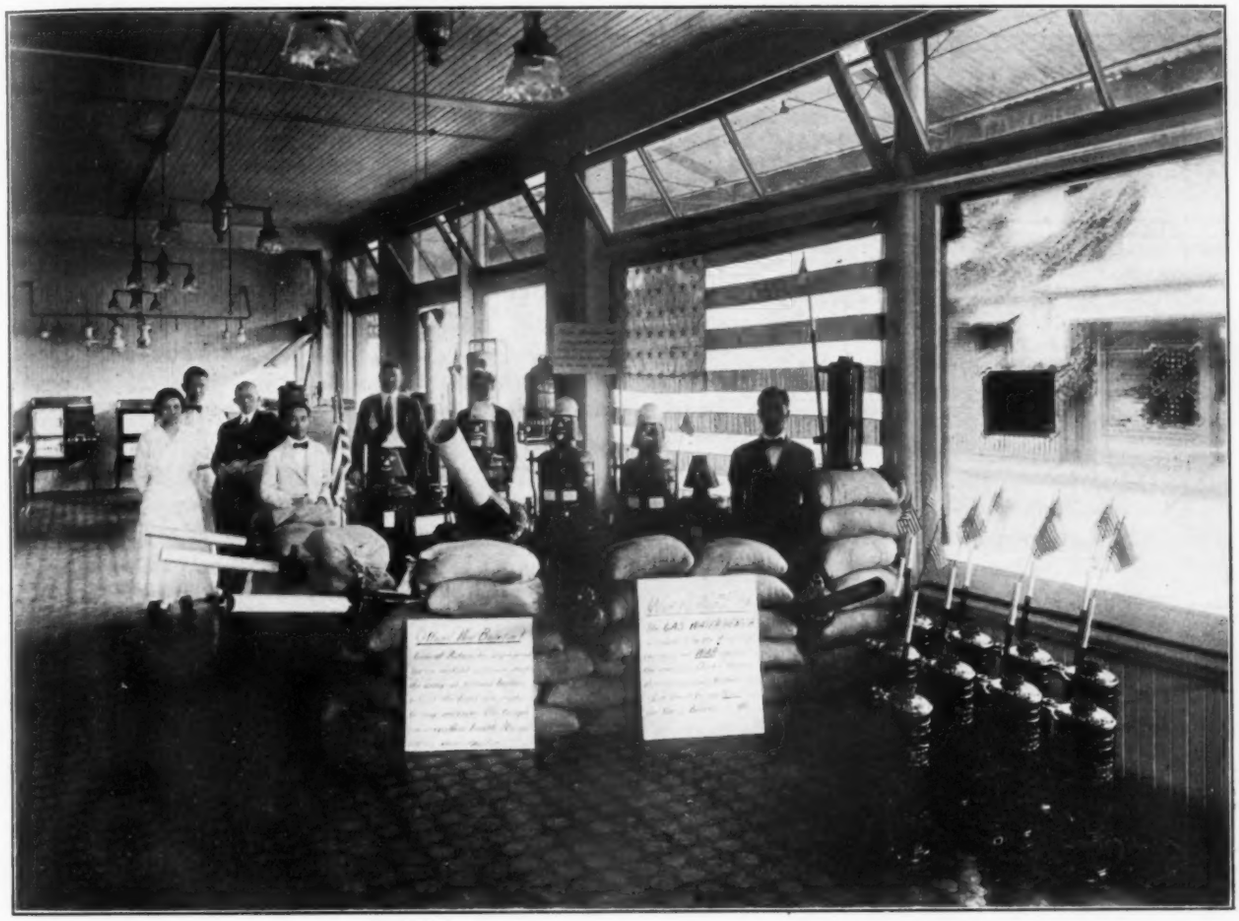
Burlington Assured of Adequate Gas Supply Next Winter

There will be plenty of gas for Burlington, Kan., next winter, the Keiser Gas Company having bought a lease in the new gas field near Yates Center and attached the three splendid wells on it to the Yates Center and Burlington systems. And in addition to the three wells already brought in and attached the company expects to drill in three additional wells, which should insure abundance of gas not only for cooking but for furnace and all kinds of heating.

The new field at Yates Center is expected to provide sufficient gas to more than supply Burlington and Yates Center, and the gas in the Buffalo field, which has been piped to supply these places, will be used in Buffalo and Neodesha.

Gas Explosion at Bethlehem Plant

With a shock that could be heard over the entire city of Bethlehem, Pa., a quantity of gas exploded early on July 20 in the purifying building of the Allentown-Bethlehem Gas Company, at Bethlehem, causing a blaze which entailed damage amounting to $10,000. Fortunately no one was in the building at the time.



ATTRACTIVE MILITARY DISPLAY MADE OF WATER HEATERS IN SPECIAL CAMPAIGN AT HONOLULU

By Quickly Capitalizing Interest in Gas Aroused by Fair Honolulu Company Sells 85 Water Heaters

In the month of June Hawaii's First Territorial Fair, in which the Honolulu Gas Company had an exhibit, was held. This stirred up considerable interest in the use of gas, and the company followed it up with a special water heater week the first week in July, and was successful in selling eighty-five water heaters, consisting of two No. 6 Ruud Automatics, one No. 4, two No. 3, eight No. 2½, twelve No. 25 and sixty Ohio M Instantaneous Heaters. The office was converted into a miniature fort with water heaters defending it, and Old Glory floating above it all.

The AMERICAN GAS ENGINEERING JOURNAL is indebted to Frank Q. Cannon, manager of the Honolulu Gas Company, Limited, for these notes and the photograph accompanying them.

Rate Increase for Manchester, N. H.

Beginning July 1, the price of gas in Manchester, N. H., was increased 10 cents per 1,000 cu. ft. and a straight service charge of 25 cents per month for the ordinary house meters will be added. Permission to raise the rate was secured the Peoples Gas Light Company by a finding of the public service commission.

The service charge for meters is a State-wide charge, the commission allowing all gas companies operating in the State of New Hampshire to charge for meters every month. The prices range from 25 cents a month for the ordinary household meter to $1.70 for the meters used in the mills.

The price of gas per 1,000 ft. will be $1.20 gross, with a discount of 10 cents if paid within a certain period, making the net price $1.10.

If the ordinary householder uses 1,000 cu. ft. of gas under the new arrangement, the bill will be for $1,20, less 10 cents discount, and a service meter charge of 25 cents, making the bill for a month's gas $1.35, and so on according to the amount of gas consumed and the size of the meter.

Everett Company Files New Schedule of Rates

A new schedule of rates was filed recently with the public service commission by the Everett (Wash.) Gas Company, effective in thirty days. The new tariff increased the minimum from 50 to 90 cents and the rate for the first 1,000 ft. from $1.60 to $2.25.

Application for Increased Rate Filed by Freeport Company

The Freeport (Ill.) Gas Company July 20 filed an application with the public utilities commission for an increase in gas rates to $1.35 net, with a minimum bill of 75 cents. The new rates are on a sliding scale, but the $1.35 proposed rate is the only rate affecting residence consumers.

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The Employee Who Makes Mistakes

It takes all kinds of men to make a world. There are chronic blunderers, who possibly could not do other than blunder, regardless of how much effort is put into training them. Then there is the fellow who makes more mistakes than any other in the employ of the company, yet has a warm place in the heart of the management, for, when coldly analyzed, it is found his percentage of mistakes as contrasted with the work he does is the smallest on the record.

Manifestly if John Jones makes a hundred installations and James Smith makes ten, John faces the possibility of making ten times the number of mistakes James does, and if he makes only five times as many his average is the better of the two. If there should come a time when the services of one of these men had to be dispensed with, it is certain it wouldn't be John.

We would not advise broadly a wholesale policy of blundering as a means of getting ahead. But history has shown that the careers of men who have gotten up have not been free by any means from errors and slipping-up. Mistakes are pardonable; many times even commendable. But lack of initiative or timidity are almost unsurmountable obstacles to success. Judge not the worker on the number of mistakes he makes, but on the percentage.

This message is not written for the elucidation of gas company executives. They have already gauged John Jones at his true value. It is written rather for the worker who may be prone to magnify too much the importance of the number of mistakes he makes, and thus pave the way to timidity at tackling hard jobs. The average man of ambition is generally his own most merciless critic. The shortcomings that his employer will scarcely notice is too often sufficient to surfeit him with self-disgust to the serious impairment of self-confidence and *morale*.

When the War Ends

When the war ends the productiveness of this country must not be lessened in the least iota. Otherwise economic disturbances, and possibly worse, may result.

When the war ends the millions who have been mobilized into essentially military work must be provided places in the industries. And there must be work for the hundreds of thousands of new workers who have been brought by war-time conditions into the industries.

We are now producing vastly more than the country itself can consume. When the war ends we will not have the market for these surplus products we now have. We must find new markets for the peace-time surplus products or our industries must slow up. That would mean no work for hundreds of thousands, the consequence of which would be disagreeable to contemplate.

We will not find the market in England, in France, or in the countries which are now our enemies. These countries have been spending money in enormous sums. They will have to curtail; to restrict imports and expand exports.

All the warring nations must seek the nations now neutral as a market for their surplus products. And the competition will be most intense. We will have to meet low prices.

Low prices can be met in two ways: either by economizing in labor by means of low wages, or by effecting the same result by increased productiveness of the individual labor and low cost of fuel, etc.

There is where we as gas men come in. By increasing the efficiency of our processes we can eliminate all wastage in gas making and can lower the country's total coal, oil, etc., bill by directly and indirectly lessening the amount necessarily consumed. In eliminating wastes in selling, we can thus subtract from the price the manufacturer must pay for his gas furnace, and by increasing its efficiency we can make his fuel cost per unit of production less. By adapting it to a greater and greater number of his uses we can cut down the labor bill per unit of production. There are countless ways in which we can help our country's exporters compete successfully against cheaper European labor costs, and unless they do, we must reconcile ourselves to lower standards of compensation and the inevitable hard times.

When the war ends the country will have no need of merely gas men, or electrical men, or any other kind of men. That day has passed. The need will be for expert gas men, expert electric men, etc. And on the question of whether it will find them in ample quality and quantity or not, will depend whether or not these United States are going to be a cheerful and comfortable place to live in when the war ends.

The Brooklyn Borough Gas Company Decision

It is a unique development that the jurist who, to a greater degree than any other man perhaps, was responsible for putting 80-cent gas for the environs of New York City on the statute books of the State of New York, and who, as Governor, was responsible for the establishment of its public service commissions, should reappear in regulatory matters in the State as the Moses who may lead it out of the hopeless confusion into which it has apparently drifted in the matter of regulating utilities.

The JOURNAL is convinced that confidence in the integrity of Charles Evans Hughes is unanimous in New York State. Even the gas companies, who have been penalized through the inflexibility of the law he was instrumental in establishing, never doubted the honesty of his motives. And, the fact that Mr. Hughes states that to compel the Brooklyn Borough Gas Company to sell gas at 80 cents is confiscatory, will in itself be sufficient to influence the consumer to pay the added charge cheerfully. It would appear that we are approaching a basis of logic and plain common sense in utility rate regulation in New York State, and it is indeed time that we should.

A regulatory commission that apparently has not the power to regulate—unless it may be perhaps downward—is a nuisance, an expense and a holdback. Its powers have been sufficient apparently to make it necessary for gas companies to utilize the services of expensive legal talent and to keep their highest salaried executives day after day before its tribunal, when in the best interests of all concerned they had better be back at their desks in the gas offices, but they have not been sufficient to reach a definite conclusion or decision.

The fact of the legislative body protruding itself into regulatory matters is, of course, the source of all the confusion. New York State has come into the limelight before through half-baked legislation, and doubtless will again as long as it has its Hearsts and the like, and as long as it makes it possible for them to help ambitiously obliging youngsters into its legislative halls. There can always be found someone to father a bill that the most casual consideration would reveal as conducive to confusion and unjustifiable expense.

But the regulatory commission cannot be absolved entirely. We are somewhat of the opinion that if there was some gas company which should decide to caulk its joints with an inefficient tool, the mechanics who operate that tool would soon compel a reconsideration. The New York service commissions, as Mr. Hughes established them, were constituted of high caliber men. But they have been through many vicissitudes since. There have been various new appointments. The right kind of men would have found out long ere this where they stood as to powers, and would have gotten rid of the encumberances that held them back from really earning their $15,000 salaries.

Peat for Use as Fuel

Although small quantities of peat were prepared for use as fuel in experiments and by the owners of small bogs for burning at home, no peat fuel was produced commercially in the United States in 1917. Construction was begun in 1917 on several peat-fuel plants in the New England States, where the recent coal shortage was keenly felt, but none of them were completed in time to operate in that year. The year 1918 will probably record the resumption of the commercial production of peat fuel in this country.

The demand for peat for use as fertilizer and as stock food is steadily increasing as its value is becoming better appreciated, and in view of the condition of the commercial fertilizer market, of the unprecedented growth of the peat industry in 1917, and of the good results reported by many who used peat in that year, the outlook is good for still greater expansion in 1918.

Publications

Weights of Various Coals

U. S. Bureau of Mines pamphlet; 9 x 6 in.; paper backs; 14 pages; illustrated. Author, S. B. Flagg.

Many different kinds of coal have been tested and analyzed by the Bureau of Mines in the course of its investigations relating to the purchase and use of fuel by the Government and to safety in coal mining. Advantage has been taken of the opportunity thus afforded to obtain information as to the difference in weight of the different varieties.

Probably most people know that different coals vary somewhat in weight, but there seems to be little available information as to the range of this variation. Marks gives the specific gravity, or weight compared with an equal volume of water, of anthracite as 1.4 to 1.8; of bituminous coal as 1.2 to 1.5; and of lignite as 1.1 to 1.4. Marks also gives an average value of 97, 84 and 78 pounds for the weight of a solid cubic foot of each of these fuels. These figures are useful in computing the amount of coal in the ground under a given area, but most persons are more interested in the weight of a cubic foot of broken coal as delivered or as stored Obviously, variations in the weight of the solid coal affect the weight of the coal as delivered, and one must not expect a cubic foot of lignite in a pile to weigh as much as a cubic foot of anthracite. However, factors other than variations in specific gravity affect the weight of a cubic foot of delivered or stored coal. Among these are the quantity of surface moisture, the proportions of coarse and fine coal, and the amount of shaking or settling.

The Bureau of Mines has never undertaken to determine how far each one of these factors affects the weight of a cubic foot of coal, but a table given in this pamphlet shows the results of some observations of the changes in weight and volume of one type of coal from wetting and from shaking or settling. This sample was a bituminous coal from a mine in Westmoreland County, Pa., which was working both the Upper and Lower Freeport seams.

Most of the coals for which weights per cubic foot were determined were received in barrel shipments for test in small low-pressure boilers; hence domestic rather than steam sizes predominated. Another table shows the weights per cubic foot determined by shoveling coal loosely into a box measuring 2 ft. by 2 ft. by 2 ft., and leveling off with a straightedge. For some samples two weights are shown, one being the value for the coal as received and the other for coal broken so as to have no lumps larger than a man's fist.

Safe Practices—Grinding Wheels

Folder; 11 x 8¼ in.; 8 pages; illustrated. Issued by National Safety Council, Chicago, Ill.

Deals with inspection of new wheels, storage, mounting, machine conditions, straight flanges for straight-sided wheels protected with hoods, speeds, work rests, wheel dressers, flanges for wheels not protected with hoods, protection hoods, eye protection and dust.

The Potentiometer System of Pyrometry and Temperature Control

Flexible board covers; 60 pages; 8x10½ in.; illustrated. Issued by the Leeds & Northrup Company, Philadelphia.

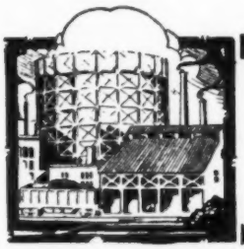
This work describes a system of pyrometry and temperature control in which the potentiometer method is employed for measuring the electromotive force of thermocouples. A known electromotive force is included in the circuit with the thermocouple, and by varying the known electromotive force, the current can be varied until a galvanometer, also in the circuit, indicates that no current is flowing. When this has been done, the thermocouple electromotive force is, of course, equal to the known electromotive force. Due to the fact that no current flows at the moment of measurement, changes in the resistances of lead wires, thermocouples, galvanometers, etc., are eliminated and do not affect the result. By making the lead wires of the same material as the thermocouple, the "cold junction" of the latter is brought back to the instrument, where its effects can be compensated for automatically. The variable electromotive force is obtained by a moving contact along a slide wire through which a standardized current is flowing. This may be done by hand, as in potentiometer indicators, or by mechanical power, as in the Leeds & Northrup recording potentiometers. In these instruments the galvanometer acts merely as a trigger or pilot. When deflected, the boom is forced by reciprocating parts against other parts which mechanically adjust the slide wire contact, the amount of adjustment depending upon the amount of deflection. When no current is flowing the boom stands at the neutral position and there is no adjustment. It is thus possible for a delicate and sensitive galvanometer to control the expenditure of a considerable amount of power. This fact has been taken advantage of to construct curve-drawing and multiple-circuit printing recorders, and also to operate signal lamps and indicators at the furnaces. The recorder thus takes the place of an attendant, who would otherwise be required to read the pyrometer and to signal its indications. The potentiometer is also applied to a special apparatus for the location of the thermal transformation or recalescence and decalescence points of metals. The Leeds & Northrup Company has developed an apparatus by which temperatures are plotted as ordinates and temperature differences between the sample and a non-recalescing body on a magnified scale as abscissæ. This shows the transformation points graphically, as the temperature of the sample remains nearly constant for a time at such points, although the non-recalescing body continues to change.

United Gas Improvement Output

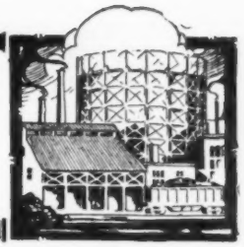
The statement of the United Gas Improvement Company, of Philadelphia, Pa., for the quarter ended June 30 last shows the quantity of gas manufactured to have been 2,991,400,000 cu. ft. The amount of money received for gas sold in that quarter was $3,124,933. The city's share under the lease was $775,909, compared with $541,412 in June last year.

For six months ended June 30, the amount of gas manufactured was 6,352,214,830 cu. ft., the city's share of the receipts being $1,530,011, compared with $1,132,803 last year.

Since Jan. 1, the city, under the terms of the lease, has received 25 cents on each dollar of revenue from gas sold.



NEWS OF THE GAS INDUSTRY



Combustion Engineers Wanted by Oil Conservation Bureau

The Bureau of Oil Conservation, Oil Division, U. S. Fuel Administration, is desirous of securing a combustion engineer for each of the following districts, who will act as an inspector, visiting all plants within his district using fuel oil and natural gas: Boston, Providence, New York City, Philadelphia, Pittsburgh, Buffalo, Detroit, Chicago, Minneapolis, Tulsa, New Orleans and San Francisco.

It is desirable to have these men act as volunteers where possible, but the Administration is prepared to pay a reasonable compensation for men who cannot afford to give their services to the Government. Only men who have had experience in fuel oil and natural gas combustion would be of value.

California High Schools to Give Gas Engine Course

Californians desirous of becoming tractor experts will have the benefit of short, intensive courses dealing with the principles of gas engines and the driving of tractors which are to be established in the high schools in agricultural districts under the State Council of Defense.

Teachers will be sent to the various districts and everyone will be eligible to enter the classes.

It is planned to form three circuits of the State.

St. Albans Gas House Damaged by Fire

The fire which started about 10.30 a. m., July 12, in the gas house of the St. Albans (Vt.) Gas Light Company caused damage amounting to several hundred dollars. The fire started in the boiler room from a spark which fell in some oil on the floor. The flames spread quickly through the wooden partition to the roof. Much of the metal roofing was torn off by the firemen. The men had hard work to keep the fire from the storage tank near the building. There were 16,000 cu. ft. of gas in the tank.

Municipal Ownership of Public Utilities to Be Considered

Municipal ownership of gas, electric and water plants will probably come in for discussion at the annual meeting of the League of Third Class Cities, which will be held in Erie, Pa., on Monday, Tuesday and Wednesday, Aug. 26, 27 and 28. City Clerk Marks is in receipt of a request from Fred H. Gates, secretary of the league, for data relative to the cost of municipal gas and electric lighting, etc. The question of municipal ownership is doubtless being agitated by the fact that numerous private gas, electric and water companies are applying to the public service commission for permission to increase their rates.

St. Joseph's Supply of Natural Gas Cut Off Due to Break in Main Across River

No natural gas will be available in St. Joseph, Mo., this year, according to V. L. Elbert, general manager of the St. Joseph Gas Company, who says that the cost of repairing the break in the main across the river is so large that the task probably will not be undertaken. According to Charles L. Faust, city counselor, negotiations are now in progress to gain permission to carry the line across the bridge at Leavenworth, Kan. This would be much cheaper and could be done in less time. The petition for an order requesting the receiver of the Kansas Natural Gas Company to repair the break in the line is being considered by the Federal District Court now.

THE BEND OIL & GAS COMPANY, Lexington, Ky. Capital, $100,000. Incorporators, A. L. French, Fred Estes and W. B. Hall.

Chattanooga Company Corrects Gas Wastage

Contracts for 29,620,000 cu. ft. Monthly —Many Manufacturers Plan to Equip Plants for Gas

Contracts for the sale of 29,620,000 cu. ft. of gas per month have been closed by the Chattanooga Gas Company with various manufacturers, and many more contracts are in sight. S. E. DeFrese, manager of the company, says:

"A quarter of a million feet of gas is going to waste every day, but this is unavoidable because it is impossible to equip numberless manufacturers with gas furnaces in three or four days. Each furnace requires a special design. With the great scarcity of labor more time is required just at this juncture than in less troublous times. It is about as difficult to get 'quick action' on gas furnaces as it is to get 'quick action' in canning the Kaiser."

At present the company has closed contracts with the following manufacturers for installing furnaces:

Dixie Logging Tool Company, entire plant equipped with gas.

Fuller Auto & Wagon Works, japanning department.

Converse Bridge & Steel Company, rivet heating department.

Cahill Iron Works, enamel melting furnace.

Chattanooga Plow Company, portion of forging department.

Southern Machine Works, manufacture of shells and hot water system.

Chattanooga Bottle & Glass Manufacturing Company, annealing lehrs, melting tank.

Lookout Refining Company, boilers.

The last two firms mentioned will consume 1,000,000 ft. per day.

The Southern Machine Works has already installed its furnace and is now using 1,000,000 ft. per month.

Besides these finished contracts, one firm interested in the proposition will use 9,000,000 ft. per month, which is more than half the amount

used by the entire city at present.

Besides these there are half a dozen other manufacturers waiting for final plans.

Mr. DeFrese further states that it is not the desire of the gas company to see gas bled into the air. The gas company, which is losing the money value of the gas, regrets it almost as sincerely as those who object to it from the purer motive of patriotism. But Rome was not built in a day, nor gas furnaces installed in a day and a half.

Work of U. S. Employment Service for Unskilled Labor Started Aug. 1

Further attention is called to the plans of the U. S. Employment Service, and to the great effect which this program will have upon the industrial life of the nation.

Aug. 1, the supplying of war industries with common labor was centralized in the U. S. Employment Service of the Department of Labor, and all independent recruiting of common labor by manufacturers having a payroll of more than 100 men diverted to the U. S. Employment Service. This is in accordance with the decision of the War Labor Policies Board and approved by the President on June 17. (The War Labor Policies Board is composed of representatives of the War, Navy and Agricultural Departments, the Shipping Board and the Emergency Fleet Corporation, the War Industries Board, and the Food, Fuel and Railroad Administrations. Its chairman is Felix Frankfurter, assistant to the Secretary of Labor.)

The above action was found necessary to overcome a perilous shortage of unskilled labor in war industries. This shortage was aggravated by an almost universal practice of labor stealing and poaching.

While the restrictions against the private employment of labor apply only to common labor at the present time, these restrictions will, as soon as possible, be extended to include skilled labor. In the meantime, recruiting of skilled labor for war production will be subject to Federal regulations now being prepared.

This drastic change in the nation's labor program has been found necessary in order to protect the employer and the employed, to conserve the labor supply of the communities and to cut down unnecessary and expensive labor turnover (which, in some cases, is as high as 100 per cent a week), and to increase the production of essentials.

While non-essential industries will be drawn upon to supply the necessary labor for war work, the withdrawal will be conducted on an equitable basis in order to protect the individual employer as much as possible.

Under the operating methods adopted, the country has been divided into thirteen Federal districts, each district in charge of a superintendent of the U. S. Employment Service. The States within each district are in turn in charge of a State director, who has full control of the service within his State.

In each community there is being formed a local community labor board, consisting of a representative of the U. S. Employment Service, a representative of employers and a representative of employed. This board will have jurisdiction over recruiting and distributing labor in its locality.

A survey of the labor requirements is being made, and in order that each community may be fully protected, rulings have been issued that no labor shall be transported out of any community by the U. S. Employment Service without the approval of the State director; nor shall any labor be removed by the service from one State to another without the approval of the U. S. Employment Service at Washington. Every effort will be made to discourage any movements from community to community or State to State by any other service.

This labor program has the approval of all producing departments of the Government, through the War Labor Policies Board.

It must be understood that farm labor will be protected, for the industrial program includes special efforts to keep the farmer supplied with labor.

The requirement that unskilled labor must be recruited through the sole agency of the U. S. Employment Service does not at present apply in the following five cases:

1. Labor which is not directly or indirectly solicited.
2. Labor for the railroads.
3. Farm labor—to be recruited in accordance with existing arrangement with Department of Agriculture.
4. Labor for non-war work.
5. Labor for establishments whose maximum force does not exceed 100.

When the survey of labor requirements has been made and the aggregate demand for unskilled labor in war work is found, each State will be assigned a quota, representing the common labor to be drawn from among men engaged in non-essential industries in that State.

These State quotas will in turn be distributed among localities. Within each locality employers in non-war work, including those who are only partially in war work, will be asked to distribute the local quotas from time to time among themselves. Quotas by localities and individuals are to be accepted as readily as they are for Liberty Loan and Red Cross campaigns. This plan of labor quotas is a protection for all communities.

The object is to keep any community from being drained of labor, and to use local supply, as far as possible, for local demand. The situation, however, is such that in certain cases some men may have to be transported over long distances.

This is probably the most drastic action that the Government has taken since putting the National Army draft into effect. The absolute necessity for this program can be seen when it is realized that in Pittsburgh, for instance, there are advertisements calling for men to go to Detroit, while in Detroit street cars there are posters asking men to go to Pittsburgh. This same condition is apparent all over the United States, and in the consequent shifting of labor a great part of our war effort is dissipated.

Increase Granted Ashland Company for 6 Months—Will Remain in Force Another Year

The Ashland (Wis.) Light, Power & Street Railway Company has asked the State railroad commission for an extension of the time for the increased gas rates established last February.

Last February the company was allowed to increase the gas rate till Aug. 1, 1918. An application dated July 10 of this year was made by the company for an extension of the time of the increased rate to July 1, 1919, on the grounds that the "emergency conditions which warranted the increased rates in February still exist,

and will continue to exist for a considerable time in the future."

The railroad commission states that "in view of the information submitted with the application, we are of the opinion that the emergency rate schedule established by the ruling of Jan. 30, 1918, shall remain effective till July 1, 1919.

Utilities Commission Orders for Illinois Companies

The following orders were issued by the State public utilities commission: Permanently suspending present gas rates of the Central Illinois Public Service Company in Pana and putting in effect new rates effective July 1, 1918; suspended until Dec. 31, 1918, pending investigation the proposed gas rates of the Public Service Company of Northern Illinois in Ottawa and Morris; granted the McKinley utility system permission to substitute meters for flat rates for steam heating service in Danville, Bloomington, Urbana, Champaign, Galesburg and Clinton.

Valuation of Oklahoma Natural Gas Company Increased

The valuation of the Oklahoma Natural Gas Company was fixed at $5,900,000 by the State board of equalization July 23.

The valuation last year was $4,918,000. During the last year the company had made improvements amounting to $1,041,000. The board added the improvement cost to last year's valuation and then deducted 10 per cent for depreciation in arriving at the valuation for this year.

Menominee & Marinette Company Applies for Increase in Rates

The Menominee & Marinette Light & Traction Company has filed with the Wisconsin Railway Commission an application for an increase of their gas rates in the city of Marinette, Wis. The present rates of the company puts illuminating gas in the following scale: First 2,000 cu. ft., $1.67 per 1,000; to 20,000 cu. ft., $1.50; and over 22,000, at $1.25 per 1,000. Power and fuel gas, $1.11 per 1,000 cu. ft., with all payments subject to 10 per cent discount if paid before the 10th of the month, a nominal charge of 50 cents per month for the meter and charges of installation paid by the consumer. In the application to the commission by the company an increase in rates is asked and such adjustments as in the opinion of the commission are necessitated because of the increase cost principally in coal and labor, also the upkeep of the plant and the general maintenance.

President Wilson Issues Order Suspending Civil Service for Gas Men

President Wilson, in an executive order issued July 23, suspended the civil service requirements for the duration of the war as applying to the employment of persons at the American University in work relating to gases and chemicals used in war. The order was issued because of the "urgent and highly confidential character of the work involved."

Two Kansas Companies Seek Approval of Bond Issues

The Public Utilities Commission of Kansas heard applications for two bond issues July 18. The Kansas Gas & Electric Company, of Wichita, sought permission to issue $475,000 worth of bonds, while the Home Light, Heat & Power Company, of Pittsburg, asked approval of a $76,000 bond issue. Both applications were taken under advisement.

Red Wing Company Given Slight Increase

By resolution unanimously passed by the council the Wisconsin-Minnesota Light & Power Company is given authority to increase the rate for gas 10 cents per 1,000 ft. over and above the rate established by the council on July 1, 1916. The new rate schedule is effective Aug. 1, and is regarded merely as a temporary increase. The gas company in a report stated that the increase is justifiable on account of the increased cost of coal and freight rates. An allowance is also made for a like increase in the value of by-products, such as coke.

In recommending the 10-cent raise the committee stated that the company must maintain a standard of at least 600 B.t.u. in the manufacture of gas. The company must give city officials access to the plant at all times to ascertain whether or not this standard of gas is supplied.

The company asked for a 35-cent increase in rates, and the committee in its report states that while a temporary increase of 10 cents is recommended, the gas rate problem is one that demands extensive investigation and it will continue to serve until all information available is obtained on the subject.

Fuel Administration Orders Lightless Nights to Conserve Fuel

Under orders just given by the Federal Fuel Administration, lightless nights to be observed on Mondays and Tuesdays began this week in Indiana.

Already the lowering of fuel consumption by gas utilities throughout the State is becoming noticeable. Under the order received by the Federal Fuel Administration headquarters in Indianapolis the use of fuel for outdoor lighting, window displays and gas signs used for advertising purposes will be discontinued on Monday, Tuesday and Thursday nights in the New England States, New York, Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia. In all other States Monday and Tuesday nights will be observed as lightless nights. Street illumination in all cities will be restricted in the amount necessary for safety.

Such an order had not been expected for several weeks, but the State administration says it will take steps at once to have the order fully observed in Indiana.

The order affects gas companies and electric companies particularly.

The use of illumination for display in shop windows, store windows or in signs in store windows will be discontinued from sunrise to sunset, and will be discontinued entirely on the nights designated as lightless nights.

Roof gardens, outdoor moving picture shows and outdoor restaurants are the only places which are exempted in the order. These places may use their lights as usual.

The county fuel administrators are instructed in the order to arrange with municipal authorities for the regulation of public lighting, and the regulations agreed on

shall be subject to the approval of the State fuel administration responsible for the enforcement of the order.

Alex R. Holliday, assistant State fuel administrator for Indiana, and Horace H. Herr, director of conservation of the State administration, said no difficulty in the enforcement of the order is anticipated. When the lightless nights were ordered last winter the administration experienced little trouble in bringing about a complete adherence to the ruling.

Cities having cluster lights for illumination purposes will be permitted to use only as much of the clusters as is necessary to insure safety in traffic.

After outlining the restrictions for lighting systems controlled by cities, the order of the Federal administrator continues:

"The use of light generated or produced by the use or consumption of coal, gas, oil or other fuel, for illumination or displaying advertisements, announcements or signs, or for the external ornamentation of any building, shall be entirely discontinued on the nights designated.

"The use of light generated or produced by the use or consumption of fuel for illuminating or displaying any shop windows, or any signs in store windows, shall be discontinued from sunrise to sunset, and shall also be discontinued on the nights specified as lightless nights."

In connection with the order the State administration has received a statement from the Federal administration calling attention to the loyal manner in which the miners of the country have responded to the appeal for increased production of coal, and emphasizing the need of eliminating all wasteful or unnecessary use of coal.

Hearing Held on Medina Company's Rates

The chief subject discussed at the regular meeting of the Medina council Tuesday night, July 9, was the request of the Medina (Ohio) Gas & Fuel Company that it be granted the privilege of increasing its rates in the village from 25 cents net to 35 cents net per 1,000 cu. ft.

Superintendent Ewing of the company was present and detailed the company's reasons for desiring to alter the rates fixed by ordinance for a ten-year period beginning May 9, 1911.

"At the time the rate was fixed," said Mr. Ewing, "it was agreed by both the council and the company that the rate appeared to be fair, and at that time, and for some time thereafter, it was fair, and allowed the company a reasonable margin of profit. For the last three years, however—in fact, even before the entrance of this country into the war," he stated, "prices of piping and labor, the chief items of expense in the production of gas, began to soar, until now, and for some time back, they have doubled."

Mr. Ewing stated that the company is forced to make vast expenditures for new leases and in the continual drilling of many new wells, not to secure gas for additional villages but to maintain the service of those cities the company is now serving, and with which it has franchises that will not expire for several years.

In line with this statement Mr. Ewing asserted that the gas fields in that section were rapidly becoming exhausted; that the Ashland field has already played out, Wayne County is rapidly giving out; and he predicted that this winter would probably wind up every gas pool of any account in Medina County. "This condition," he said, "would compel the company to supply this field from its wells in Holmes County and other remote fields to give adequate service until the expiration of its franchises."

As evidence that his company has been and is losing money at the present rate, Mr. Ewing invited an inspection of the company's books. He also stated that the vast holdings now being acquired by his company were paid out of the earnings of the company, which brought forth a discussion as to whether this should be considered a legitimate expense, as in the event the company would go out of business its expenses in the last four or five years of its life would be practically nothing.

The council disposed of the question for the time being by requesting that the company submit to council a certified audit of its accounts for the past two or three years. Mr. Ewing stated that this would be done before the next regular meeting of council, and an adjourned meeting of that body will be called to consider the accounts.

If it can be shown to the full satisfaction of council that the company is losing or is making no profit at the present rate, that body gave practical assurance that the company's request would be considered with favor.

According to Mr. Ewing, the suburban districts in that section are paying the 35-cent rate, and within the past month the villages of Seville, Leroy, Lodi, Burbank and West Salem have authorized by ordinance the increase asked by the company.

80 Cent Rate Denied Natural Gas Companies of Missouri and Kansas

The Kansas City Gas Company and other companies distributing natural gas in Missouri and Kansas were denied the right to put into effect the proposed increase in gas rates by Judge Wilbur F. Booth in the Federal Court at Minneapolis July 20.

All of the distributing companies, through J. W. Dana, their attorney, announced several weeks before the hearing an arbitrary increase from 60 cents per 1,000, the old rate, to 80 cents per 1,000, with an added meter charge of 50 cents. In his decision Judge Booth denied permission, declared an application first must be made to the Federal Court and reserved the right to reject such application if he saw fit. The distributing companies were given ten days to file formal application for increased rates.

Representatives of the Missouri Public Service Commission, the Kansas Public Utilities Commission and of cities receiving natural gas appeared before Judge Booth merely "asking for relief." That plan was agreed upon at a meeting of representatives from the two States in Kansas City. A part of the plan was to file application for a temporary injunction against the distributing companies, but Judge Booth held that was unnecessary; that the gas companies had acted arbitrarily and without authority. Judge Booth fixed the old rate of 60 cents and he held the order by him fixing that rate restrained the companies from making any increase.

Novel Honor Roll to Be Made of Denver Employees in Service

The Denver (Col.) Gas & Electric Company, a Henry L. Doherty subsidiary, has arranged for a roll of honor, made of metal, which is to contain a name plate for each man who has entered the service.

The company has also constructed an electric service flag, which has been placed in its office in Denver. This company is selling small flags made of glass illuminated by one lamp

Increased Rate Granted Le Mars Company

An ordinance amending provisions of the present ordinance governing the conduct of the LeMars (Iowa) Gas Company was introduced at the regular monthly meeting of the city council authorizing a charge of $1.85 per 1,000 cu. ft., with a discount of 25 cents on 1,000 or over, and after a brief discussion was passed on its first reading. The ordinance became effective on its third reading.

Commission Rejects Plea of Corte Madera for Extension of Mains

The railroad commission has dismissed the case of the town of Corte Madera, Marion County, Cal., against the Pacific Gas & Electric Company. The town wanted the company ordered to extend its gas mains to serve the community. In its decision the commission stated that the investment would not bring the company a fair return, and that such extension should wait until peace times.

Increase Granted Two California Companies

The railroad commission issued an order fixing a new schedule of rates for gas sold by the Fowler Gas Company in Fowler, Fresno County, Cal. The revenue from the new rates will be approximately $6,240 a year and the net revenue $1,706, which should return the company 5.53 per cent on its capital.

The commission also issued an order authorizing the Ukiah Gas Company to raise its rates. The new rates, it is calculated, should yield the company $1.865 per 1,000 cu. ft., as compared with $1.46 under the present schedule.

Increased Rate Sought for Washington, Ind.

The hearing of the petition of the Washington Water, Light & Power Company for an increase in gas rates served to consumers in Washington, Ind., was in progress at the City Hall July 23 before Edwin M. Corr, of the Public Service Commission of Indiana.

The company bases its contention for an increase on statements that the cost of coal, chemicals, labor and everything used in producing gas has increased to such an extent that the revenue is not in proportion to the amount of money invested in the properties.

Laclede Stockholders to Meet Sept. 10

A meeting of the stockholders of the Laclede Gas Light Company has been called for Sept. 10, to vote on increasing the authorized common stock from 175,000 shares to 375,000 shares, par value $100.

File Application for Increase in Bryan Rates

At the regular meeting of council recently, the Ohio Gas, Light & Coke Company filed an application for an increase in the gas rates in effect in Bryan to $1.50 per 1,000 cu. ft. The present rate is $1.25, with a discount for cash.

Conditions brought about by the war has made it impossible for the company to produce gas without a loss under the rate fixed several years before the beginning of the present unsettled conditions. The cost of production has been given an unusual increase by the advanced cost of coal, higher wages and the big raise in freight rates.

Pennsylvania Companies Seek Higher Rates

The St. Petersburg (Pa.) Speechly Oil & Gas Company filed a new tariff to become effective on Aug. 1, making an increase in the unit rates for gas from 20 cents net to 25 cents net per 1,000 cu. ft., with a minimum charge of 50 cents per month whether that much gas has been consumed or not.

The Fidelity Gas Company filed a new tariff of rates governing the distribution of natural gas in the borough of Aliquippa, effective Aug. 1, and increases the rate from 28 cents per 1,000 cu. ft. up to and including 500,000 cu. ft. per month, and from 26 cents per 1,000 for all in excess of 500,000 cu. ft. per month, to a straight rate of 35 cents per 1,000 cu. ft. for all gas consumed.

North Shore Plant Valued at $1,274,927

A. S. B. Little, State utilities commission gas expert, in his report to the commission has placed the cost of the entire North Shore Gas Company at $1,487,159 and its present value at $1,274,927.

Peoples Company Files Brief Showing Financial Condition in Rate Increase Case

Three points are outstanding this week in the Chicago gas litigation, aside from the filing July 22 of the company's brief and the answer of the city to the petition before the Public Utilities Commission for an increase in rates.

First was the statement of Edwin Hedrick, representing the Peoples Gas Light & Coke Company, that he has no fear that the Supreme Court will hold, in the valuation phase of the alleged overcharges for consumers' case before Judge Torrison in the Circuit Court, that the company is limited in its valuation to original cost of plant, etc., only, as Prof. Bemis, for the city of Chicago, contends.

Next was the attorney's prediction that if the so-called Sutton case, appealed at the May term of court and set for decision at the October term, is decided by the Supreme Court in favor of the company, it would end all litigation; and third was the action of the attorneys in presenting to the city the fifty-seven volumes of valuation figures prepared by experts of the company.

War prices for materials used in gas making forced the company to ask for a 30 per cent increase in rates, attorneys for the company declared in its brief, which told how the company's financial condition has become serious. In 1915, and before, a dividend of 8 per cent on the capital stock of $38,500,000 was paid. In 1916 the dividend was reduced to 6½ per cent; while in 1917 it was only 3½ per cent. No dividends have been

paid since, the company's brief declared.

The statement of A. S. B. Little, gas expert for the commission, who declared that there was room for considerable improvement in the company's management, was denied.

Company Has No Right to Earn Dividends on Stock

Another phase of the litigation developed when the State utilities commission was told by Donald R. Richberg, representing the city, that the gas company "has no right to earn dividends on its stock." Actually, in the opinion of Mr. Richberg, who sets forth these allegations in his answer to the company's request of the commission for an increase in rates, the filing of such a petition was "absolutely illegal."

In the case before Judge Torrison the attorneys for the city contend that the company is entitled only to have valued for rate-making purposes property which is actually owned and real estate which is owned in fee simple, and that the value of all property, real and otherwise, should be fixed at the original cost. In other words, if real estate owned by the company has increased in value since the company bought it, the company is entitled only to returns on the amount of the original actual investment, and the city's attorneys are seeking to have the court direct the master to find out the original cost and fix the value of the property at that sum.

This is the theory of Prof. Bemis. Attorney Hedrick joins that contention with the authoritative statement that although, in similar cases, courts have said that original cost might be considered as an element, no court has adopted it as a standard of value. On the contrary, the United States Court has held in many cases that the companies were entitled to fair cash market valuations on their properties.

In the so-called Sutton case, where Mr. Hedrick believes a Supreme Court decision favorable to the company would mean the end of all gas litigation, James L. Sutton, a consumer, brought suit to recover the difference in gas rates paid by him and those set in the Circuit Court. The city council in 1911, under the provisions of an enabling act passed by the State Legislature in 1905, enacted an ordinance fixing rates for gas on a sliding scale of 75, 70 and 68 cents. This was at the time of the famous Harrison campaign for 70-cent gas. The company took the case into the courts and the judge fixed a rate of 80 cents to be charged pending the hearings, whereupon the Sutton suit was brought.

The city, which joined in the proceeding, contended that the gas company had waived the question of the constitutionality of the act of 1905, which had been attacked by the company. Judge Doyle of the Circuit Court, in deciding the case, said he had very grave doubts of the constitutionality of the act, and that he would leave the question of alleged waiver by the company to the Supreme Court. He then rendered judgment for Sutton. The company's appeal is set for the October term.

Inventory of Fifty-seven Volumes

It was in the case before Judge Torrison in the Circuit Court, which has gone over for further hearing until Sept. 17, that the company's attorneys presented the fifty-seven volumes of inventory. This is possibly the most unique document of that kind on record. It was completed at a cost of a million dollars for the use of the company in connection with city ordinances before the public utilities commission and in the Torrison court case. A remarkable array of facts and figures concerning the company's properties is shown. The various plants and distributing systems are set out in detail, and not an item of the vast holdings is missing. Five firms of expert engineers did the compiling, the initial work being done by Sanderson & Porter, Sloan, Huddle, Freustal & Freedman, and William Baehr, while the checking was done by W. G. Haginah and H. I. Lee.

To his answer to the company's petition for increased rates before the utilities commission Mr. Richberg devotes fifty printed pages, and declares that the main emphasis of the company's application "has been laid upon the desire to build a new plant." The credit of the company, he finds, must be reestablished in order to raise money for this purpose.

Whereupon Mr. Richberg opines that "rates cannot be imposed upon gas consumers for the purpose of financing additions to the company's property."

After taking a long look into the future, Mr. Richberg declares that "if gas consumers are to be taxed $5,000,000 a year in increased rates in order to pay for additions to the company's property, it would seem absurd afterward for the company to claim the right to a rate return upon this investment made by the gas consumers. Yet the company would undoubtedly claim that right, even though the gas plant were built out of the earnings obtained by overcharging consumers."

Carrying out this line of argument, the city's special counsel reached the conclusion that if the gas consumers are thus to pay for the new plant, they "should certainly own it" when built. He made it even stronger—that the company's application for a 30 per cent rate increase is "a demand for the right to compel gas consumers to pay for the cost of a new plant and to compel them to pay in the future interest upon the investment of their own money."

After all of which it is declared that even if the increase were allowed it would not be adequate to carry out the announced plans of the company. A gorgeous hunk of patriotism was injected into the answer with the charge that gas company officials "sought to capitalize their public service needs for their private profit and to use war conditions as an excuse to boost their deflated stock values." The remainder of the answer comprises efforts to refute claims of higher cost of operation advanced by the company.

Pay Roll Held Up

While Mr. Richberg was filing his answer more trouble was looming for him at the city hall. Corporation Counsel Samuel A. Ettelson, who had returned from the East, declared that he would take the matter to court before he would pay Mr. Richberg and his accountants the money they claim is due them in salaries.

"We will O. K. all legitimate vouchers," said Mr. Ettelson.

"However, this office will not stand for any rakeoffs or subterfuges on the part of anybody connected with the gas litigation. Furthermore, we want Mr. Richberg to go into court and make a test case on some voucher we may select and which we will disapprove. In this manner the entire atmosphere will be cleared."

Attorney Hedrick for the company said he regretted exceedingly the controversy between Ettelson and Richberg, for the reason that there was entirely too much chance for misinterpretation by enemies of the company.

Counsel and Expert Denounced as "Crooks"

Samuel Insull, chairman of the board of directors of the Peoples Gas Light & Coke Company, paid his respects in vigorous style to Donald R. Richberg, special gas counsel for the city, and Prof. E. W. Bemis, gas expert for the city, during the hearing on his company's petition for increase in rates before the Illinois Public Utilities Commission in Chicago, July 23.

Aroused by continued misrepresentation of the valuation of the company's property, Mr. Insull denounced Mr. Richberg and Mr. Bemis as "crooks" following the attorney's strictures upon the company.

Mr. Richberg, using the figures submitted at an earlier hearing by A. S. B. Little, gas expert for the commission, had declared the valuation of the company's property to be about $46,000,000 instead of in the neighborhood of $108,000,000, as claimed by the company.

At the end of the noon recess Mr. Insull approached Attorney Richberg and Mr. Bemis.

"Do you mean to say that your figures are correct?" he asked.

"Why, certainly," said the attorney.

He also accused the company of unfairness in breaking its contract with the city.

Arguments for the gas company were made by Attorneys Boetius H. Sullivan and Timothy F. Mullen.

"The company has spent more money than it can ever recover," said Mr. Sullivan. "If the commission tells us to go back to the city council for permission to raise rates, as Mr. Richberg urges, I say that we will not do it.

"We have been there before and have gained nothing. The company has been made a political football by those opposed to it. The gas question is not a political one, and if it is not out of politics we will put it out."

The company's attorney questioned the correctness of the figures submitted by Engineer Little, declaring it would have been a physical impossibility for him to read and compare the company's inventory in the ten days he gave to the work.

The commission ruled that if the opposing attorneys wish to file reply briefs they will be received.

"Mr. Insull's wrath was misdirected," said Mr. Richberg, in commenting on Mr. Insull's declaration. "We quoted figures of the gas company's experts and experts for the commission."

This statement is denied by Mr. Mullen for the company.

Comparative Costs of Manufacture

Some interesting figures were brought out in the address of Attorney T. F. Mullen, representing the Peoples Gas Light & Coal Company, before the Illinois Public Utilities Commission last week.

"The cost of materials used to manufacture gas in 1917 was 21.89 cents more for each 1,000 cu. ft. of gas than in 1916," he said. "In the present year the additional cost of materials has mounted to 27.87 cents more than four years ago. To this must be added 3 cents for each 1,000 cu. ft. for transportation of materials, making a total of nearly 31 cents additional for each 1,000 c. ft. of gas.

"In comparison with these figures the company is asking for an increase in rates of slightly more than 20 cents for each 1,000 cu. ft. over the prevailing rates."

A further decrease in the company's net earnings since 1914 was shown in the statement of Attorney Mullen. In 1914, he said the net earnings were $3,292,467; in 1915, $3,228,000, and in 1916, $2,770,000.

"In 1917," the attorney continued, "the company's earnings were nil; in fact, there was a deficit of $365,000, which has been increased during the present year to $1,250,000. It is apparent that the company cannot continue at this rate and that its plea for relief must be granted."

Expects Decision Soon

The company exects to learn by the end of the present week whether or not it is to be permitted to increase its gas rates to the consumers of Chicago. This is the promise of the public utility commission, which will hand down this ruling in Springfield just before the adjournment for the summer vacation.

The members of the commission who are to determine whether or not the company is entitled to the proposed increase are: Thomas E. Dempsey, East St. Louis; Fred E. Sterling, Rockford; Walter A. Shaw, Evanston; Frank A. Funk, Bloomington, and P. J. Lucey, Chicago. Commissioner Shaw is writing the decision.

The city's gas experts averted their threatened strike last Saturday when Corporation Counsel Ettelson agreed to authorize payment of their back salaries. Mr. Ettelson agreed with the council committee to approve the payrolls of Richburg, with one exception, which is to be made the basis of a test case. There is a question as to the power of the city council to employ special attorneys, if the corporation counsel's office is adequate to care for the city's interest.

The experts whose testimony has figured both in the litigation before Judge Torrison in the Circuit Court and before the public utilities commission, which has been hearing the petition for the increase in the company's gas rates, have quite unanimously accepted the proposition of Corporation Counsel Ettelson to pay their salaries.

Glenn E. Plumb, an attorney, is to receive $11,000; A. L. Sangster, an accountant, gets $10,000, and Prof. E. W. Bemis, city gas expert, and his staff will draw down $18,000.

Donald R. Richburg, special counsel for the city, in his brief in answer to the Peoples Gas Light & Coke Company's request for an emergency increase, called Samuel Insull, chairman of the board of directors of the company, a "gold-plated" anarchist, whatever that may mean. He was getting back at Mr. Insull for the latter's strictures on himself and Professor Bemis in connection with false valuation figures placed upon the company's property and assets.

According to Mr. Richburg, Mr. Insull is a "ringleader" and a lot of other horrible things in connection with the gas company's interests.

Mankato Rates Increased for Period of War

Increased cost of coal, material, labor, freight rates and other production costs have compelled the Northern States Power Company to raise its rates, according to a statement given by R. E. Brown, general manager of the company in Mankato, Minn. The new rates include an advance in the gas rate from $1.21 per 1,000 ft. to $1.50, and a minimum charge of $1 per month for gas. The minimum charge formerly was 50 cents. The old rates will be restored when conditions become normal.

Council Raises Ottumwa Rates

As the result of an audit of the Ottumwa (Iowa) Gas Company's books by the city engineer, the city council has adopted an ordinance permitting the company to collect $1.50 per 1,000 cu. ft. for gas until costs of producing gas go down.

The engineer found that the actual cost of delivering gas at the burner to be 93.15 cents per 1,000 cu. ft. He placed the value of the plant at $650,000, from which he estimated that gas was costing $1.36½ per 1,000 cu. ft., delivered to the consumer. The company had been charging $1.35. There is a case pending in the Federal Court over the gas rate.

Commission Approves of $2,000,000 Bond Issue for Improvements

Because of the great demands made upon the public utility corporations of Richmond County, New York, through the big shipbuilding plants and other war activities resulting in a rapid growth of the population, the public service commission July 26 authorized the issue by the New York & Richmond Gas Company of $2,000,000 in bonds so that the company might extend and improve its plant. Twenty-five per cent of the amount is not to be charged to the capital account, but is to be amortized and retired out of income.

In making this concession the commission stated that it was not to be taken as a precedent, because it was only accorded for the purpose of permitting the company to refinance its obligations and to enable it to continue the "performance of its functions." The commission stipulates that the old bonds must be retired, the necessary capital additions must be made, and the discount paid. In explanation of the commission's action Commissioner Hervey said that the commission was disposed to meet extraordinary conditions with expedients which might not be necessary or warranted under normal conditions.

"The solvency of public utility companies," he said, "the conservation of their properties, the maintenance of their service, the fulfillment of their franchise obligations in a time of world war, are tasks which demand the hearty co-operation of the commission, the company and the consumers. Under normal conditions it is of course preferable that no bonds be sanctioned for purposes chargeable to operating expenses or to income, even with the provision for amortization during the period the bonds will be outstanding.

"War-time conditions and the unusual demands upon the company's production of gas, demands for which provision must be made if next winter is not to bring suffering for lack of gas for heating and the cessation of supply for power purposes, may call for a relaxing of the rule."

Higher Rate Allowed New Jersey Company

The application of the Hammonton & Egg Harbor City Gas Company to increase its rate from $1.35 per 1,000 cu. ft. with a rebate of 10 per cent a thousand, provided the bill is paid by the tenth of the month, to $1.90 per 1,000 ft., with the same rebate, was, July 19, allowed by the board of public utility commissioners.

Gas through prepaid meters shall be charged for at the rate of $1.80 per 1,000 cu. ft. These new rates are effective immediately.

Combined Earnings All Byllesby Properties

Comparative statement of the earnings of all Byllesby utility properties is reported as follows for the month of May, 1917 and 1918, and the years ended May 31, 1917 and 1918:

Month of May	1918	1917	Increase	% Inc.
Gross earnings	$1,712,473	$1,465,313	$247,160	16.8
Operating expense	1,035,704	812,901	222,803	27.4
Net earnings	$676,769	$652,412	$24,357	3.7
Years ended May 31				
Gross earnings	$20,803,854	$17,969,054	$2,834,800	15.7
Operating expense	12,228,485	9,465,204	2,763,281	29.1
Net earnings	$8,575,369	$8,503,850	71,519	0.9

Racine and Kenosha Rates Increased

The Wisconsin Railroad Commission authorized the Wisconsin Gas & Electric Company to add a surcharge of 20 cents per 1,000 cu. ft. to its rate for gas in the cities of Racine and Kenosha for a period of six months. The company justified its application for this increase by showing that the cost of production had greatly increased, and that for the month of January, 1918, after providing for depreciation, the amount available for return on investment was practically nothing, while for the month of February, 1918, the showing was much worse. The commission stated that nothing was to be gained in the long run by denying the relief which was necessary to sustain the company's credit, and that, while it was desirable that public utility rates be as low as was consistent with the cost of securing capital, it must not be overlooked that rates which are too low really increase the cost of securing capital and, in times like the present, make it almost impossible to secure the capital necessary for development and extensions.

Cairo Rates Increased

The State public utilities commission issued an order July 23 suspending permanently the present rates for general gas service in Cairo, Ill., of the Cairo Gas Company, and making effective, as of July 1, 1918, until July 1, 1919, a rate of $1.50 per 1,000 cu. ft.

Natural and Artificial Gas Rates Increased at St. Marys, Effective Sept. 1

New gas ordinances were recently adopted by the Municipal Council of St. Marys, Ohio, and signed by the proper officials. The new rate, effective Sept. 1, is 50 cents per 1,000 cu. ft. for natural gas and $1.35 per 1,000 cu. ft. for artificial gas.

Decision of Ex-Judge Hughes in Brooklyn Borough Case

Charles Evans Hughes, whose investigations before he became Governor gave Manhattan and the congested parts of Brooklyn "80-cent gas," has decided that the Brooklyn Borough Gas Company, which supplies Coney Island, Gravesend and a part of Flatbush, is not bound by the 1916 act of the Legislature allowing it to charge but 80 cents per 1,000 ft., nor by the act of the public service commission, which fixed the rate at 95 cents.

The opinion of Former Justice Hughes of the United States Supreme Court becomes a judgment of the Supreme Court of New York State, because he was appointed to "hear and determine" the whole question. His decision becomes operative from the moment it is filed.

The substance of the decision is that both the 80-cent rate fixed by the Legislature and the 95-cent rate fixed by the public service commission are confiscatory in that even the 95-cent rate, which has been in practical operation since 1914, would in time become confiscatory. He finds that the company has been supplying gas at a loss under the 95-cent rate.

Judge Hughes finds that not only was the 80-cent rate fixed by the Legislature confiscatory, but that the Legislature has practically shorn the public service commission of power to fix any rate whatever.

Judge Hughes did not fix any rate. In fact, he says the court has no power to do so. So we will have to fix our own rate, and the company has decided to raise the gas rate to $1.25 per 1,000 ft.

After having reviewed at length the history of the Brooklyn Borough Gas Company's fight for a living rate, ex-Justice Hughes says in conclusion:

"The court has no power to fix what is a reasonable rate and the Legislature has seen fit to deprive the commission of power to afford the relief to which the plaintiff is entitled. As the plaintiff is thus left without adequate remedy, it is entitled to relief in equity from the enforcement of the statutory rate which has superseded the earlier rates, so long as that rate denies to the plaintiff a fair return for its public service."

The Legislature not only passed a law invalid as to this company, but ousted the public service commission of jurisdiction over the rates of this company while the law was permitted to remain in its present form.

"The outcome of the case thus far shows the unwisdom of the Legislature in creating a commission to fix fair rates after a careful investigation, and then continuing to pass laws fixing new rates without any investigation at all.

Increase Allowed Quincy Company

A rate increase of 5 cents per 1,000 cu. ft. of gas consumed, except for the last "block," where there is an increase of 10 cents, was allowed the Quincy (Ill.) Gas & Electric Company by the public utilities commission. The new rate is effective as of July 1.

Personal Notes

F. R. Bigler, purchasing agent of the Kansas City Gas Company, is making a survey of the industries of New York City in order to overcome the labor shortage difficulties, which may be affected by employing cripples. Mr. Bigger, himself, is handicapped by the loss of a hand and a leg. He says that a properly instructed cripple can do anything that the average worker can do. He has been demonstrating this in shops and factories throughout New York City. Mr. Bigler was loaned by the Kansas City Gas Company to the Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York City, until Jan. 1, 1919. He is attempting to make a complete survey of local industry before he returns.

J. Bowdoin Cocke has accepted his former position as superintendent of the gas department of the Newport News (Va.) & Hampton Railway, Gas & Electric Company, and has already resumed his duties. A note appeared in the May 25 issue of the American Gas Engineering Journal stating that he had resigned.

Charles Otten, Jr., has been appointed consulting engineer for the Kings County Lighting Company, Brooklyn, N. Y. Mr. Otten has made an enviable reputation in the industry. He assumed his new duties the latter part of July. This appointment was recently announced by Ralph Elsman, general manager of the company.

George Meads, one of the officials of the New Haven (Conn.) Gas Light Company, has put up a camp at Myrtle Beach for the use of the employees of the company for the summer months. There will be no distinction and all the employees of the company may have free use of the camp any time they come to the beach, for a day, week or any length of time they desire.

C. N. Turner, traffic manager of the Milwaukee (Wis.) Coke & Gas Company, has been elected president of the Milwaukee Athletic Club. Mr. Turner previously served on the board of directors and has been a member of the club for many years.

William E. Lewis, for many years vice-president of the Utica (N. Y.) Gas & Electric Company, resigned that office July 15.

Frank M. Tait was elected president and general manager of the Utica (N. Y.) Gas & Electric Company, to succeed James C. Brady. Mr. Tait will have full charge of the company and has had a wide and successful experience in the design, management, operation and financing of gas companies.

James C. Brady resigned as president and general manager of the Utica (N. Y.) Gas & Electric Company to become chairman of the board of directors of the company.

The Bridgeton (N. J.) Gas Light Company, at its annual meeting elected the following directors: B. H. Minch, W. C. Mulford, S. P. Fithian, E. P. Bacon and H. A. Jordan. Following the annual meeting the directors organized by re-electing the following officers: President, B. H. Minch; vice-president, S. P. Fithian; secretary and auditor, W. C. Mulford; superintendent and treasurer, Jacob B. Jones.

Oscar F. Zollikoffer, who died July 18 in his seventy-second year, was for many years an officer of the Consolidated Gas Company of New York, from which he retired some years ago.

WILLIAM C. LOUNSBURY has recently been elected general manager of the Superior (Wis.) Water, Light & Power Company. He has been general superintendent for a number of years and is well known among the fraternity of electric, gas and water men. He is a member of a number of technical societies, and is at present vice-president of the Wisconsin Electrical Association. Mr. Lounsbury was born thirty-eight years ago in Brooklyn, N. Y., and is a graduate of the Massachusetts Institute of Technology. The Superior company operates the water, gas and electric utilities of the city, and Mr. Lounsbury's promotion is the result of twelve years' work with the company.

ALFRED A. LANE, JR., drum major of the Forty-seventh Regiment Field Band, died July 19 at his home, 27 Norwood Avenue, Brooklyn, N. Y. He was thirty-seven years old and was employed as a bookkeeper by the Brooklyn Union Gas Company.

Hearing of Newburyport Rate Case Postponed Until August 5

The hearing on the petition of the Newburyport (Mass.) Gas & Electric Company for an increase in the price of gas to the consumer from $1.40 net to $2 net per 1,000 cu. ft., has been postponed to Monday Aug. 5.

Construction Notes

Hibbing Plant Nearing Completion

The Hibbing gas plant, for which the American Construction Company, of Newton, Iowa, was awarded the contract last winter at $192,000, is rapidly approaching completion. The superintendent in charge announces that he expects to have the plant in operation in September. Gas mains are being laid in all of Hibbing proper and the additions with the exception of the original plant of Hibbing, which portion it is believed will be moved soon after the termination of the war. With the scarcity and high cost of wood and coal, people are relieved at the prospect of having gas.

The water, light, power and buildings commission met July 24 and awarded the contract for gas meters to the Duncan Meter Company, of Lafayette, Ind., at 60 per cent of list prices.

Franchise Granted for Gas Plant at Walters

The McBride Company, Inc., of St. Louis, Mo., one of the largest independent oil operators that has entered the Cotton County field, July 23 was granted a franchise to install a natural gas plant at Walters, Okla., the developing field near by to be the source of supply.

Producer Gas Plant to Be Erected at Springfield

As a safeguard against any possibility of a natural gas shortage next winter, the Robbins & Myers Company, Springfield, Ohio, plans to begin work on the construction of a producer gas plant.

The building will be 36 x 40 ft. It will be of brick and concrete and fireproof. It is proposed to install the Smith system of coal gas producer. Gas is used for enameling, heat treating, soldering mantles, etc.

Increased Sales at Sunbury Necessitates Company's Installing New Apparatus

The sales of gas from the Sunbury, Pa., gas plant of the Northumberland County Gas & Electric Company have increased to such an extent that contract for a new 6-ft. double superheater carburetted water gas apparatus has been placed with the Gas Machinery Company, of Cleveland, Ohio.

This apparatus is now in the course of construction, and the plant will be completed at an early date in order to insure the continuance of good and efficient service.

Equipment of Shelbyville Natural Gas Company to Be Sold—Artificial Plant Will Be Erected

Stockholders of the Citizens Natural Gas, Oil & Water Company, of Shelbyville, Ind., at a recent meeting held there, instructed directors and trustees of the company to petition the Indiana Public Service Commission for authority to sell the pipe lines, wells and equipment of the concern outside of the city at once.

This action is taken with the idea of establishing immediately an artificial plant in Shelbyville. The stockholders of the Citizens company authorized the trustees and directors to obtain the ground for and to put up an artificial gas plant in Shelbyville, "as speedily as the same can be done."

Approximately $10,000 is expected to be obtained by the sale of the pipe lines, which extend through Shelby County and some distance in Hancock County.

The fact that the supply of natural gas is so low that it would not be possible, it is feared, to supply the consumers at Shelbyville this winter is the reason for the intended action.

There is much opposition to the plan to abandon the plant of the natural gas company, even during the period of construction of the new artificial gas plant.

The Interstate Public Service Company now owns the only artificial gas plant in Shelbyville.

To Extend Gas Mains in South Manchester

The South Manchester (Conn.) Light, Power & Tramway Company is planning on making extensive additions to their gas mains in South Manchester. All of the new houses built by Cheney Brothers, purchasing agents of the company, in the last two years on the west side of the town will be equipped with gas. In order to do this it will mean the laying of over 4,000 ft. of gas mains. The gas company is not making additions to their mains this year by reason of the fact of their inability to secure pipes for service mains. It is understood that they had contracts for large supplies of service pipes to be used in South Manchester, but that Government needs have called for all the iron pipe which is used for gas mains. It is stated that in order to lay the gas mains on the streets for the Cheney tenements it will be necessary for Cheney Brothers to supply the service pipes. The gas company will lay the pipes, and in digging the trenches for the pipes the trench digging machines will be brought to this place. The company is at present at work on a big extension of its service in Elmwood. There have been many applications for extensions of the gas mains in other sections of the town, but the wants of Cheney Brothers will be supplied first, because that firm is to supply the necessary service pipes.